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Vegetable Situation

Economics, Statistics, and Cooperatives Service

U.S. Department of Agriculture

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Approved by the World Food and Agricultural Outlook and Situation Board

THE VEGETABLE SITUATION

CONTENTS

	Page
Summary	3
Recent Developments and Outlook	4
Fresh Vegetables	4
Processed Vegetables	7
Potatoes	10
Sweet potatoes	12
Mushrooms	12
Dry Edible Beans	13
List of Tables	37

Special Article:
Simulation of the U.S. Lettuce Industry:
An Examination of the Effects of Increased Wages,
Michael D. Hammig and Ron C. Mittelhammer

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The World Food and Agricultural Outlook and Situation Board
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SUMMARY

This summer's outlook for fresh vegetables is highlighted by slightly larger supplies and sharply lower prices. The summer harvest acreage of 14 fresh market vegetables is up 2 percent from last year. Among the major crops, there are larger areas of broccoli, carrots, celery, sweet corn, eggplant, green peppers, spinach, and tomatoes, but smaller areas of cabbage, cauliflower, cucumbers, escarole, lettuce, and snap beans. Fewer acres of all types of melons were planted.

Fresh vegetable prices declined sharply during the spring quarter from the record-high levels of last winter. Contributing factors included the energy crisis, which, in turn, temporarily aggravated the transport situation, and larger spring crops, especially lettuce and potatoes. The index of farm prices of commercial vegetables for fresh market during April-June was 206 (1967=100) compared with 273 during the first quarter. The index is expected to decline further this summer with seasonal increases in supplies and average moderately lower than a year earlier.

Growers and processors increased their acreage of major processing vegetables by 1 percent this year. Acreage increases for tomatoes, winter spinach, green peas, and snap beans more than offset a decline in acreage of lima beans, beets, sweet corn, spring spinach, and cucumbers for pickles.

If average yields are realized, the total contract tonnage will be slightly more than last year, resulting in a larger 1979/80 supply of canned vegetables. However, increased costs of processing and general inflationary pressures are expected to keep retail prices above last year's relatively high levels.

The summer potato crop, at 21.4 million cwt., is 1 percent larger than the small crop of 1978. Normally, a crop this small would suggest higher prices, but the large carryover of fall potatoes and the depressed prices of spring potatoes has dampened prices this summer.

Planted acreage of potatoes in fall producing States is placed at 1.1 million acres, down 6 percent from the past two seasons and 1 percent below the April 1 intentions. If the fall crop turns out to be 6 percent less than in 1978, grower prices this fall will average moderately to substantially above the 1978 fourth quarter levels of $3.11 per cwt.

The dry bean acreage is 6 percent less this year. If yields are near average, prices for the major classes could average higher in 1979/80.

In 1978, per capita use of fresh market vegetables increased slightly to 103.0 pounds, up from 101.4 in 1977. Domestic production of 19 major crops increased slightly from 1977. In addition, imports of fresh vegetables, largely from Mexico, were record large in 1978, moving up to 18.5 million cwt. or roughly 8 percent of our total supply.

Excluding potatoes, the most popular fresh vegetables in 1978 were lettuce, at 26.6 pounds per person; tomatoes, at 13.4 pounds; and onions, at 10.1 pounds. Melon consumption increased in 1978 to 22.3 pounds per person, up from 21.3 pounds in 1977.

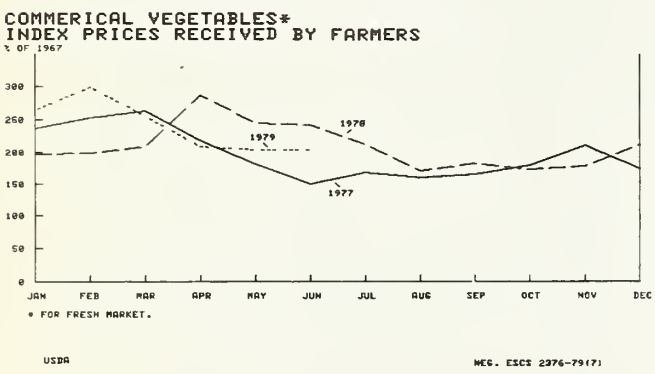
Note: In this report

Slightly = 0.1 to 2.99 percent
Moderately = 3.0 to 6.99 percent
Substantially = 7.0 to 18.99 percent
Sharply = 19.0 percent and above

RECENT DEVELOPMENTS AND OUTLOOK

FRESH VEGETABLES

The prospective acreage of 14 fresh summer vegetables is estimated at 336,330 acres, 2 percent more than last year. Potential output, based on recent yield history, suggests a 1-percent increase in production. There are larger areas of broccoli, carrots, celery, eggplant, sweet corn, green peppers, spinach, and tomatoes, and smaller areas of cabbage, cauliflower, cucumbers, escarole, lettuce, and snap beans. The total acreage of melons is moderately smaller, with watermelons, cantaloups, and honeydew melons all showing acreage declines.



During the spring quarter, fresh vegetable prices declined from the record-high levels of the winter quarter. The index of farm prices received for commercial vegetables for fresh market during the second quarter was 206 (1967=100) compared with 273 in the first quarter. The second quarter vegetable prices were lower than during the same period in 1978 (258) but higher than in 1977 (184). The index of fresh vegetable prices for the summer quarter is expected to decline seasonally from the spring level and average moderately lower than a year earlier.

In early June, truckers of perishables became reluctant to handle loads because of uncertain fuel supplies, high fuel prices, and disrupting activities of protesting truckers. This temporarily aggravated the transport situation which is normally tight at this time of the year. Drivers who did accept loads were able to charge high rates. Reports from trade sources indicate that lettuce and other vegetables were moving at double the truck rates prevailing earlier this year. For some crops—particularly lettuce—this led to depressed shipping point prices but sharply higher terminal point and retail prices.

The larger 1979 crops also tended to depress shipping point prices, especially of lettuce and potatoes. Weekly shipments and unload reports from the Agricultural Marketing Service (AMS) indicate that produce movement was roughly equal to a year earlier, suggesting that the transport disturbance probably resulted only in holding volume down to year-earlier levels. The farm labor strike in California apparently had little if any impact on shipping point prices of fresh spring vegetables.

Fresh Vegetables and Melon Use Up Slightly in 1978

Per capita use of fresh market vegetables increased slightly in 1978 to 103.0 pounds, up from 101.4 in 1977. Domestic production of 19 major crops increased slightly from 1977. Imports of fresh vegetables, largely from Mexico, were record large in 1978, moving up to 18.5 million cwt. or 8 percent of our total supply, if one includes the rough estimate for commercial production of minor vegetables. (Home garden vegetable consumption and potato crops are excluded.)

Excluding potatoes, the most popular fresh vegetables in 1978 were lettuce, at 26.6 pounds per capita annually; tomatoes, at 13.4 pounds; and onions, at 10.1 pounds.

Melon consumption increased in 1978 to 22.3 pounds per capita, up from 21.3 in 1977.

Table 1—Vegetables and melons for fresh market: Reported commercial acreage and production of principal crops, selected seasons, 1977, 1978, and indicated 1979

Seasonal group and year	Area				Production			
	Harvested			For harvested major states 1979		1978		Major states 1979[1]
	1977 total	1978			1977 total	Total	Major states	
		Total	Major states					
	1,000 acres				*Million cwt.*			
Winter	152.8	182.2	178.6	180.1	29.2	33.5	33.3	34.0
Spring	398.4	378.1	371.5	384.5	62.0	61.3	60.7	62.7
Summer:[2]								
Snap beans	31.1	28.9	26.1	26.0	1.2	1.1	1.0	1.0
Broccoli[3]	12.0	15.1	15.1	15.4	.9	1.1	1.1	1.2
Cabbage[3]	25.9	27.0	22.9	22.8	6.9	6.9	6.0	6.0
Carrots[3]	14.6	14.0	12.6	13.5	4.7	3.8	3.5	4.1
Cauliflower[3]	8.0	11.1	11.1	10.7	.8	1.2	1.2	1.1
Celery[3]	6.6	6.4	6.1	7.5	3.5	3.1	2.9	3.7
Sweet corn	106.3	104.7	96.8	98.0	7.8	7.3	6.6	6.8
Cucumbers	17.3	18.1	14.5	14.0	1.8	1.8	1.5	1.4
Eggplant	1.0	1.0	1.0	1.1	.2	.2	.2	.2
Escarole	1.3	1.3	1.3	1.2	.2	.2	.2	.2
Lettuce	53.8	58.0	53.4	50.3	14.5	16.4	15.5	14.1
Green peppers[3]	25.1	21.3	18.8	24.3	2.1	1.8	1.6	2.0
Spinach	1.5	1.5	1.5	1.8	.1	.2	.2	.2
Tomatoes	56.9	57.2	48.9	49.8	8.1	8.5	7.6	7.6
Total 14 vegetables[4]	361.3	365.5	330.1	336.3	52.8	53.6	49.0	49.6
Cantaloupes	49.5	55.3	49.5	46.1	6.8	7.5	7.0	6.7
Honeydews	9.4	12.4	12.4	11.5	1.9	2.4	2.4	2.2
Watermelons	126.0	127.6	115.0	111.1	13.0	13.9	12.3	11.1
Total melons[4]	184.9	195.3	176.9	168.7	21.7	23.7	21.7	20.1
Total summer[4]	546.2	560.8	507.0	505.0	74.5	77.3	70.7	69.7

[1] Based on 3-yr. average yield per acre. [2] July, August and September. [3] Includes fresh market and processing. [4] May not add due to rounding.

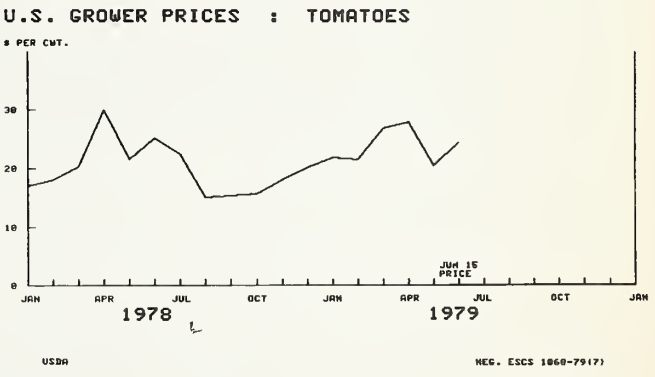
Vegetables for Fresh Market, ESCS, USDA.

Prospects for Major Fresh Vegetables

Tomatoes

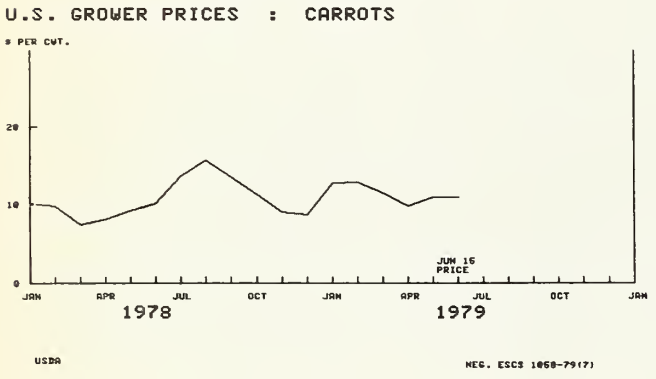
Summer tomato acreage in the major producing States is estimated at 49,800 acres, up 2 percent from last year. Assuming average yields, the summer tomato crop is expected to total about 7.6 million cwt., 1 percent less than in 1978. Among the leading States, California acreage increased 11 percent, while slight acreage increases are indicated for Michigan, New Jersey, and Tennessee. Texas, South Carolina, and North Carolina show moderate to substantial acreage declines.

Total weekly unloads of tomatoes at leading U.S. markets from April 1 through mid-May ran ahead of a year earlier. Since mid-May, weekly unloads have been less than last year because Florida's volume dropped off, and California was late in starting. Because supplies will be increasing seasonally this summer, lower prices may be expected. If yields turn out to be average, prices are expected to be near last year's levels during the summer months.



Carrots

Summer carrot acreage is 7 percent more than in 1978. Based on average yields of the past 3 years, production is projected at 4.05 million cwt., up 17 percent from last year. California, the largest producer of summer carrots, is reported to have 7,000 acres, 4 percent more than last season. Michigan, the second largest producer, reported 3,400 acres, up 6 percent from last year. In Michigan, some replanting was necessary due to rain and hail damage, but the more developed fields are in excellent condition. Wisconsin, the third largest producer, reported 1,500 acres or 25 percent more than last year; early crop development was slow with some wind damage, but later warm temperatures improved growth.

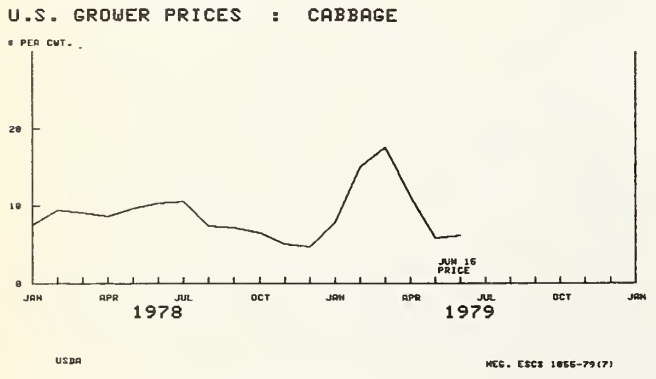


During the first half of 1979, carrot prices to growers were considerably higher than a year earlier because of smaller winter supplies and some delays in harvesting the spring crop. However, if the projected 17-percent increase in summer output materializes, grower prices will fall below last year's levels in the months ahead.

Cabbage

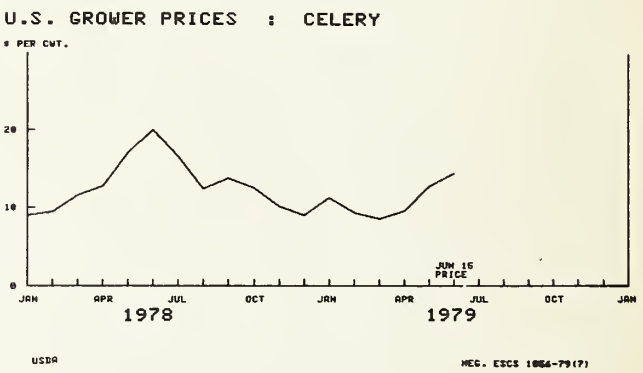
Summer cabbage acreage is estimated at 22,800 acres, virtually the same as last year. Potential production, based on average yields of the past 3 years, is also expected to be about the same as last year. New York, with the largest summer acreage, plans a 14-percent increase in acreage, and Michigan expects a 5-percent increase. New Jersey, North Carolina, and Wisconsin are showing acreage declines.

Grower prices during the period January through April were well above those of a year earlier. In May, cabbage prices dropped sharply below last year's level and continued unchanged into June. Prices this summer will probably continue below last summer's rather high levels.



Celery

Summer celery acreage is estimated at 7,480 acres, up 23 percent from last year, and production is expected to be 28 percent larger.



With the exception of January and February, grower prices have been below those of a year earlier. The sharp increase in acreage could result in grower prices well below last year's levels this summer.

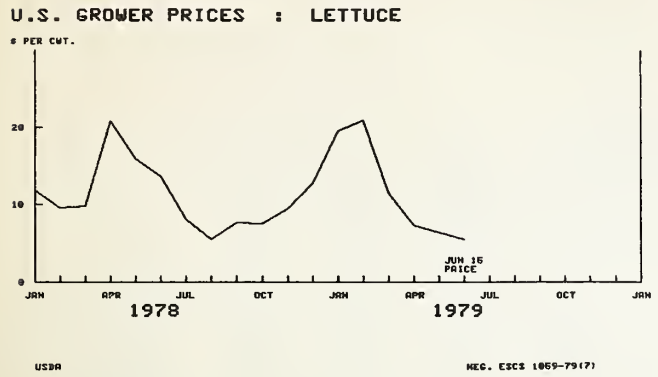
Sweet Corn

Summer sweet corn acreage is estimated at 98,000 acres, up 1 percent from 1978. Potential production is expected to be 5 percent larger than last year. Below normal temperatures have slowed growth in most areas, so harvest is somewhat delayed. Of the major producing States, only Michigan, Ohio, and Pennsylvania are showing acreage declines. Alabama, Connecticut, and Illinois will have no change in acreage. All other States indicate acreage increases ranging from 3 percent for New York to 9 percent for Massachusetts and North Carolina.

Prices to growers in the first six months of 1979 were very near last year's levels. With only a 1 percent greater acreage, summer prices will probably remain near last year's levels.

Lettuce

The acreage of lettuce for summer harvest is estimated at 50,300 acres, down 6 percent from last year. Assuming average yields, production will be about 9 percent below last year.

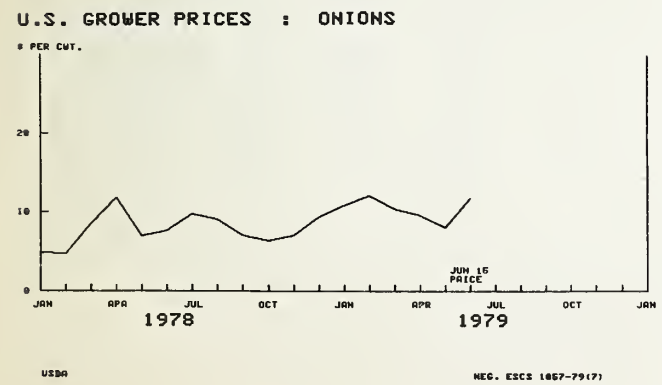


California, which accounts for over 80 percent of the summer volume, shows 7 percent less acreage than last year. New York shows 3 percent less. New Jersey and Colorado are planting the same acreage as last year. Weather conditions in California have been favorable for the summer lettuce crop. The transportation situation has been of great concern, but recently more transport has become available at lower and more normal rates.

During late June, the cost of shipping a truckload of lettuce from California to New York rose to $5,000 or 25 cents a head. A typical 1979 rate would be close to $2,800-$3,000 or 14 to 15 cents a head. During the week of July 25, truck rates edged down to $3,600 per truckload of vegetables from California to New York City.

Onions

Summer acreage of fresh market onions, including both nonstorage and storage onions, is only 1 percent larger than in 1978. This excludes the California acreage, which is primarily used for processing. Production of nonstorage onions is forecast at 3.2 million cwt., up 5 percent from 1978. Crop development in the high plains of Texas was slow because of poor quality transplants and cool spring weather. Some potential onion acreage in New Jersey was lost because of excessive rains. Wet fields delayed spring plantings in Washington, but the dry May weather allowed crops to develop on schedule.



Acreage in major onion storage States is estimated at 52,000 acres, up 1 percent from 1978. This slight change in acreage suggests prices will remain near last year's level until early 1980.

Cantaloups and Honeydews

Summer cantaloup acreage is estimated at 46,100 acres, down 7 percent from last year. A substantial decrease in California acreage is responsible for most of the change. A substantial increase in Georgia acreage helped to temper the California decline.

Summer acreage of honeydews is estimated at 11,450 acres, down 8 percent from 1978. Production is expected to be about 5 percent below last year. Both Arizona and California are showing decreases in acreage and potential output.

Watermelons

Watermelon acreage is estimated at 111,100 acres, down 3 percent from last year. Assuming average yields, the summer crop is estimated to be 10 percent smaller than a year earlier. F.o.b. shipping point prices in May and June fluctuated above last year's level. The truckers' strike probably eliminated some late season shipments from Florida. With a smaller supply in prospect this summer, prices are expected to continue to average higher than a year earlier.

PROCESSED VEGETABLES

1979/80 Prospects

Total supplies of canned vegetables in 1978/79 were about the same as in 1977/78. There were larger supplies of lima and snap beans, beets, cucumbers for pickles, tomatoes, and tomato juice, and smaller supplies of sauerkraut, sweet corn, green peas, and tomato puree.

The ESCS index of canners' wholesale prices in June was 190.1 (1967=100), 12 percent higher than a year earlier. Both the 1978 pack and carryover of frozen vegetables (excluding potatoes) were the largest on record; however, total supplies were not burdensome, and wholesale prices for most items advanced as the season progressed. Stocks of most processed vegetables at the beginning of the 1979/80 season are larger than a year earlier.

Table 2— Vegetables for processing: Planted acreage, annual 1978 and 1979[1]

Crop	Planted acreage		
	Contract 1978	Contract 1979	1979 as percent of 1978
	--- 1,000 acres ---		Percent
Snap beans	279.5	293.4	105
Green peas	388.0	410.7	106
Spinach (winter and spring)	19.8	20.2	102
Green lima beans	71.2	67.4	95
Beets	17.8	17.3	97
Sweet corn	467.2	434.9	93
Cucumbers for pickles	123.0	120.1	98
Tomatoes	295.0	318.2	109
Total[2]	1,661.6	1,682.3	101
For freezing:			
Green lima beans	42.6	41.5	97
Snap beans	71.0	69.8	98
Sweet corn	139.5	128.9	92
Green peas	143.5	157.0	109
For canning:			
Green lima beans	28.6	26.0	91
Snap beans	208.6	223.6	107
Sweet corn	327.8	306.0	93
Green peas	244.5	253.6	104

[1] 1979 production for canning and freezing will be published in December annual summary. [2] May not add to total due to rounding.

Data from Vegetables-Processing, ESCS, USDA.

Growers and processors increased their acreage of major processing vegetables by 1 percent this year. Acreage increases for tomatoes, winter spinach, green peas, and snap beans more than offset decreases in spring spinach, lima beans, beets, sweet corn, and cucumbers for pickles. If average yields are realized, the total contract tonnage will be slightly larger than last year. This indicates a larger 1979/80 supply of canned vegetables with downward pressure on prices. However, increased costs of processing and general inflationary pressures are expected to keep prices above year-earlier levels. For example, the ESCS Marketing Cost Index rose 1 percent from May to June and was 10.7 percent higher than in June 1978. Also, labor costs in food manufacturing and distribution were up 8.9 percent between June 1978 and June 1979. California cannery workers negotiated new contracts this summer calling for wage increases of 7.7 percent in the first year, 5.8 percent in the second, and 5.7 percent in the third, with cost-of-living adjustments in the latter two, if necessary.

Cold, wet weather delayed plantings in several areas this year, but since the slow start, growing conditions have been nearly ideal in most areas. California spring weather was favorable for plant growth, although hot winds in early June caused some damage to plants and fruit in the Sacramento Valley. Weather conditions in Washington, Wisconsin, and Minnesota have been excellent for the pea crops in those States.

In brief, it appears that 1979/80 canned vegetable price increases will moderate, but prices will remain higher this year than last. Higher labor, tinplate, energy, and transportation costs will be passed on to consumers, increasing prices for nearly all canned and frozen vegetables. The acreage increases are small and it does not appear likely that burdensome supplies are going to result from the 1979 packing activity, with the exception of certain tomato products.

Prospects for Leading Vegetables

Snap Beans

Acreage planted to snap beans for canning is larger again this year, up 7 percent from 1978. With near average yields, the supply for 1979/80 should be moderately larger than in 1978/79. Disappearance accelerated during the past season because supplies were larger, and 1979/80 supplies are likely to be large enough to permit increase in use. Wholesale prices for nearly all cuts and can sizes are slightly to moderately higher than a year ago. However, with even larger supplies expected, future price gains may come slower for this commodity.

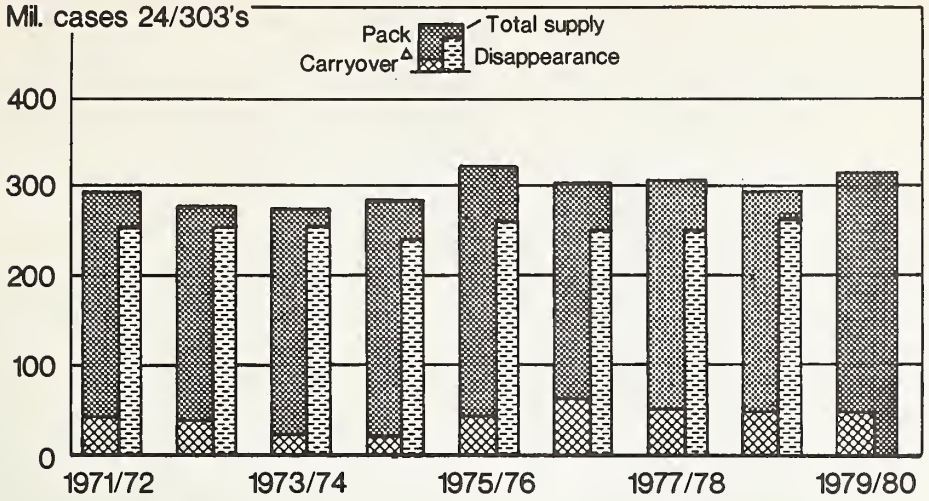
On July 1, stocks of frozen snap beans were 70 percent larger than last year. Although the quantity held is not burdensome, freezers contracted for 2 percent fewer acres in 1979 than in 1978. The pack of frozen green snap beans is expected to be down about 2 percent this year. Current wholesale prices are firm at levels moderately higher than a year earlier; they will probably remain high in 1979/80.

Green Peas

The carryover of green peas was sharply smaller than a year earlier reflecting the smaller pack from the 1978 crop. In response, canners have contracted for 4 percent more acreage this year. Despite this modest increase in acreage, if average yields are realized, total supplies in 1979/80 will be only slightly smaller than a year earlier. This indicates that prices for canned green peas will probably edge higher, reflecting the higher processing costs. By early June, the California harvest was completed and canning activity was in high gear in the Midwest. Weather had been ideal in Wisconsin and above-average yields were expected.

The acreage of peas contracted for freezing is 9 percent larger than the 143,510 acres contracted in

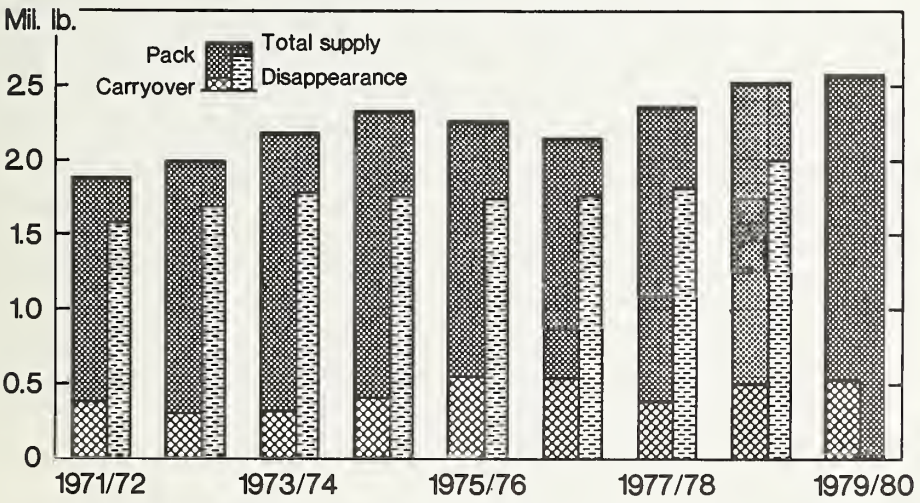
Total Supply and Disappearance of Seven Canned Vegetables*



*Lima beans, snap beans, beets, sauerkraut, sweet corn, green peas and certain tomato products.
△Canners' carryover — distributors' stocks excluded.

USDA Neg. ESCS 814-79 (7)

Total Supply and Disappearance of Seven Frozen Vegetables*



*Lima beans, snap beans, sweet corn, green peas, spinach, broccoli and carrots.

USDA Neg. ESCS 813-79 (7)

1978. With the July 1 stocks of 176 million pounds—reflecting some of this year's production—the 1979 pack is expected to approximate 390 million pounds, resulting in moderately higher total supplies. Disappearance rebounded to 368 million pounds during the 1978/79 marketing year and is expected to remain near that level this season. Despite the larger supplies, wholesale prices are expected to remain firm during the next few months.

Sweet Corn

Growers and canners contracted for 7 percent less acreage of sweet corn this year, reflecting the large carryover from the 1978 pack. Although the 1978/79 supply was large, prices for midwestern golden corn have been moderately higher this spring and consumption has fallen from the 1977/78 level. With average yields, the 1979 pack will probably total about 54 million cases (24-303's basis), resulting in a total supply only marginally smaller than the previous year. However, Minnesota's crop is behind schedule because of the late spring, and Wisconsin's crop has been reduced because of poor weather. These factors may maintain canned corn prices at the current level.

Despite an 8-percent cut in acreage contracted for freezing, the sharply larger carryover stocks of frozen corn-on-the-cob would suggest only slightly smaller supplies of frozen corn this fall. Since the early 1970's, the market for frozen corn-on-the-cob has more than doubled, while the disappearance of cut corn has remained relatively steady.

Tomatoes

An estimated 318,000 acres of tomatoes are under contract by canners in 1979, an increase of 8 percent from last year. Acreage in California—up 9 percent—accounts for 80 percent of the total. Total contract production in California is estimated at 6.2 million tons. Growers and canners agreed on a price of $56.50 per ton in bulk units—$2.50 more than was paid last year. There are early and late season delivery incentive premiums, a premium of $2.00 per ton for bin deliveries, and minor changes in inspection procedures. In California, spring weather was favorable for plant growth, but hot winds in early June caused some damage to plants and fruit in the Sacramento Valley. If weather conditions are near normal for the remainder of the summer, the canning season will be about on schedule, with harvest in the San Joaquin Valley beginning the first week of July.

The industry is anticipating larger supplies of tomatoes and tomato products this fall, since prices have increased this spring. With a larger volume of raw products and strong demand for all canned tomato products, distribution of raw products into the various tomato products will be fairly normal.

Preliminary annual per capita data for 1978 show that consumption of tomato juice once again dipped to 3 pounds. Canned tomato consumption, at 5.1 pounds per capita, is up slightly, but this figure has changed little since the mid-1960's. Demand for tomato concentrates has been the growth area in the tomato business. However, after reaching an all-time high of 13.6 pounds per capita in 1977, consumption fell to 12.8 pounds (product-weight basis) in 1978.

Asparagus

On June 30, frozen asparagus stocks totaled 18.7 million pounds, up nearly two-thirds from a year earlier. In Michigan, freezers and canners both expect to make smaller packs. Deliveries to Michigan canners through June 2 totaled 8 million pounds compared with 10.3 million pounds on a comparable date a year ago. Trade reports from Washington, however, indicate a larger tonnage available in that State this year. Larger cold storage stocks will be offset by a smaller pack this year and higher costs of growing, harvesting, and processing are expected to keep freezers' and canners' wholesale prices above last year's high levels.

Other Processing Vegetable Highlights

The contracted tonnage of cabbage for sauerkraut is 4 percent larger than a year earlier. Even with the smaller carryover expected, this 1979 tonnage would increase the total supply available this fall and winter.

Contracted acreage for spring and summer pickling cucumbers is 2 percent less than a year ago. Based on recent history, open market purchases could be expected to add about 10 percent additional supply. A smaller acreage of lima beans was contracted for freezing and canning this year, following last year's large increases and the resulting above-average carryover stocks on July 1 of this year.

With trade movement of canned beets fairly good and an average carryover in prospect, contract acreage is down slightly, after last year's 14-percent increase.

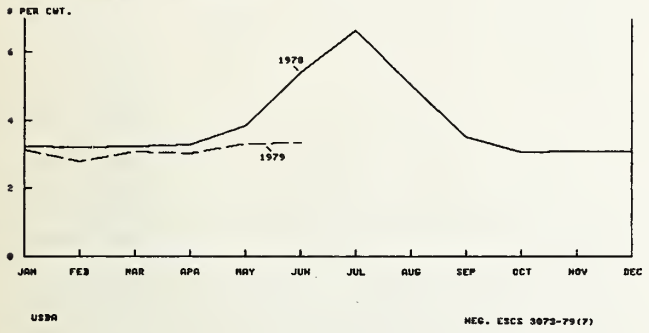
The California pack of frozen broccoli through April was 56 million pounds, 11 percent smaller than last year. This represents a supply adjustment to balance the heavy carryover.

POTATOES

The U.S. spring potato production was placed at 23.1 million cwt. (1.05 million metric tons), 28 percent larger than the record low 1978 crop. Most of the increase came from Kern County, California,

where yields rebounded to 400 cwt. per acre after having been reduced to 285 cwt. by excessive rains last year. This sharp increase in output occurred when storage supplies from northern States were at fairly high levels, despite heavy processing activity in April. As a result, prices for spring potatoes were sharply lower in June 1979 than a year earlier. Because of low prices, plus a truckers' strike, some potato acreage was abandoned. Kern County, California long whites were bringing $3.10 a cwt. in mid-June, compared with $9.50 per cwt. a year earlier. In late June, prices of round white potatoes from eastern North Carolina stood at $4.50 a cwt., compared with $11.55 a year earlier.

U.S. GROWER PRICES : POTATOES



Summer potato production, at 21.4 million cwt., is only marginally larger than a year earlier, which was one of the smallest crops since 1975. Normally, this would suggest higher prices, but the large carryover of fall potatoes and the depressed prices for spring crop potatoes will tend to dampen potato prices this summer. In addition, harvest of Norgold Russets—classified as fall potatoes—began in late July, further depressing prices for the traditional summer potatoes.

Because of the generally late spring and low prices, many producing areas began harvest a week or two later this year. With a larger supply to market, considerable quantities will likely be held over to compete with the early fall crop.

Other price-influencing factors need to be considered in assessing the grower prices this fall. The planted acreage in fall producing States is placed at 1.1 million acres, down 6 percent from the past two seasons and 1 percent below the April 1 intentions. Trade sources indicate, however, that actual plantings may be even smaller than those indicated, reflecting grower dissatisfaction with prices received during this marketing year.

If a smaller crop of potatoes does materialize this fall—down, say, 6 percent from the 1978 level—prices to growers can be expected to rise moderately to substantially above the 1978 fourth quarter level of $3.11 per cwt.

Processor demand this fall, however, will probably be weak. On June 30, stocks of frozen potato products stood at 974 million pounds, slightly more than last year and 12 percent more than in 1977. There was a high rate of potato processing following the potato-diversion program last spring. Demand for flakes and granules also may be expected to remain relatively weak, not varying greatly from the 1978 pattern.

Chip usage in 1979/80 can be expected to reflect the same turn taken by the entire economy. If there is a mild recession this fall and consumers' disposable incomes decline, some moderate decrease in the consumption of potato chips might develop.

Exports

From October 1978 through May 1979, about 1.2 million cwt. of fresh stock moved to foreign markets. This is more or less on a par with last year. A similar pattern for fresh exports in 1979/80 may be expected.

Exports of dehydrated potatoes increased sharply this season reaching 5.4 million cwt. (fresh equivalent basis) by May 1979. Manufacturers of flakes and granules are keenly interested in developing new export outlets, and it is possible that some further gains can be made in 1979/80. These products are now approved for export sales

Table 3—Potatoes, Irish: Acreage, yield per acre, and production, annual 1977, 1978, and indicated 1979

Season group	Acreage			Yield per acre			Production		
	Harvested		For harvest						
	1977	1978[1]	1979	1977	1978[1]	Indicated 1979	1977	1978[1]	Indicated 1979
	1,000 acres			*Cwt.*			*Million cwt.*		
Winter	13.4	12.9	13.2	199	203	206	2.66	2.62	2.72
Spring	91.4	90.9	89.4	250	198	258	22.87	17.96	23.06
Summer	115.2	111.9	108.3	191	189	197	21.98	21.17	21.38
Total with production to date	220.0	215.7	210.9	640	590	661	47.51	41.75	47.16

[1] Revised.

Crop production, ESCS, USDA, issued monthly.

Potato exports[1]

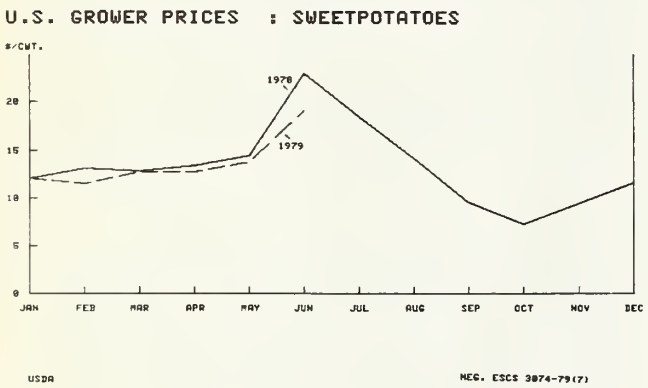
Crop year Oct.-Sept.	Dehydrated	fresh	Total	Percent of crop
	--- *Mil. cwt.* ---			
1973/74	2.2	5.7	7.9	3%
1974/75	1.7	4.0	5.7	2%
1975/76	10.6	10.6	21.2	6%
1976/77	15.7	10.3	26.0	7%
1977/78	6.6	3.5	10.1	3%
1978/79	5.4	1.2	6.6	2%

[1] Fresh weight basis. [2] Oct. thru May.

under the terms of the Commodity Credit Corporation Export Sales Program.

SWEET POTATOES

Acreage of sweet potatoes this year is 125,700, up slightly from a year earlier. Accounting for nearly all of the increase is a substantial gain in North Carolina's crop. Louisiana's acreage declined slightly from last year. These two States account for 54 percent of the total sweet potato acreage. Except for the late spring in some areas, crop conditions are generally favorable in all major producing areas.



Canners' stocks of sweet potatoes on April 1 were 3.2 million cases (24-303's equivalent), the largest supply on that date for the past 2 years. Larger than usual supplies have encouraged movement, and in early July spot supplies were readily available. With this supply-demand situation, the sweet potato canning season will probably start later this year and the canning pace will be less hectic than in some recent years.

Larger stocks of canned product and larger production this fall are expected to trigger lower prices to growers in the fall. During 1978/79, grower prices have been sharply lower than a year earlier. Prices for 1979/80 are expected to average well below current levels.

Table 4— Sweetpotatoes: Harvested acreage by States, United States

State and area	1977	1978	Indicated 1979[1]	1979 as percentage of 1978
	--- *1,000 acres* ---			*Percent*
New Jersey	2.4	2.6	2.7	104
Maryland	1.6	1.4	1.4	100
Virginia	5.6	6.1	5.9	97
Central Atlantic	9.6	10.1	10.0	99
North Carolina	33.0	37.0	39.0	105
South Carolina	2.3	2.4	2.5	104
Georgia	5.5	6.0	5.9	98
Lower Atlantic	40.8	45.4	47.4	104
Tennessee	2.8	2.8	2.8	100
Alabama	5.3	5.5	5.7	104
Mississippi	8.0	9.0	8.8	98
Arkansas	1.6	1.6	1.6	100
Louisiana	27.0	28.0	27.0	96
Texas	9.5	9.5	9.4	99
Central	54.2	56.4	55.3	98
California	7.8	8.7	9.5	109
United States	112.4	120.6	122.2	101

[1] Indicated as of June 30.

Data from Acreage, ESCS, USDA.

MUSHROOMS

Grower prices for processing mushrooms remained fairly strong throughout the 1979 season. Prices for clean-cut stock averaged 64 to 67 cents a pound throughout the season, which usually ends the end of May. This was 2 to 3 cents lower than last year's high level. This year, however, price quotations were continued through June and July, and as supplies decreased during the week of July 2, prices to growers at Kennett Square, Pennsylvania, ranged from 64 to 70 cents a pound, and averaged about 68 cents. Fresh market prices also averaged slightly lower than a year ago—70 cents compared with 72 to 74 cents during the 1978 spring season.

Beginning this year, the Pennsylvania Department of Agriculture will issue the Mushroom Market News every Friday on a year-round basis. This is a reflection of new production technologies—particularly summer air conditioning of production areas—that makes year-round mushroom production possible.

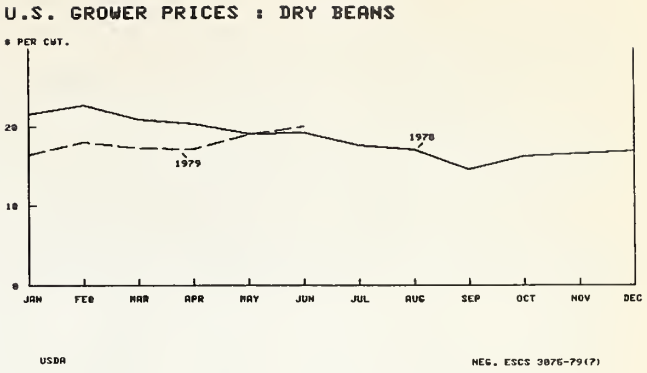
Despite larger summer production and less processing, grower prices are expected to remain strong throughout the summer. Fresh use of domestically produced mushrooms is expected to continue to grow throughout the year.

The International Trade Commission, in monitoring import competition in the domestic processed mushroom market, noted that domestic canning activity between July 1, 1978 and March 31, 1979, declined only fractionally to 67,075,000 pounds, following a 7-percent dip during a comparable period a year earlier. However, imports in the same period dipped 3 percent. A large drop in imports from Taiwan, our principal supplier, was partially offset by increases in imports from Korea, Hong Kong, and other countries. This decline in total supply of canned product caused total sales of canned mushrooms to decline to 134 million pounds for the 9 months. Included in this quantity are about 5 million pounds of frozen mushrooms. With the import share comprising 50 percent of all processed consumption, the domestic industry is again showing concern.

DRY EDIBLE BEANS

The U.S. acreage for harvest of dry beans is 1.4 million acres, 6 percent less than in 1978. Only Montana, Nebraska, Utah, and Washington planted more beans than in 1978, while Colorado and Wyoming planted the same amount. In the leading State—Michigan—acreage is 500,000 acres, down 11 percent.

Except for September 1978 and June 1979, average monthly grower bean prices during the current marketing season have been below those of a year earlier. The 1978 acreage was about the same as in 1977; however, production in 1978 was up 7 percent



the largest since 1974. In October, average grower prices fell to $16 to $18 a cwt. and remained within that range through April. Prices rose to $19 in May and to $20 in June.

Domestic use has been steady, but exports have been about a third heavier than last year. Exports of pinto and red kidney beans increased threefold, and Great Northern exports increased twofold. Dry bean production in 1978 was 15 percent larger than in 1977. From September 1978 through May 1979 exports of dry beans, excluding seed, were up nearly two-fifths to 4.3 million cwt., compared with 3.1 million cwt. during the same period in 1977/78.

By Classes—Navy Beans

The navy bean crop will be smaller this fall because in Michigan the acreage for harvest is down 11 percent. The 1978 navy bean harvest was the largest since 1974. Despite this, September

Table 5—Beans, dry edible: Acreage, yield per acre, and production, annual 1977, 1978, and indicated 1979[1]

Group State and classes	Acreage			Production[2]		
	Harvested		For harvest 1979[3]	1977	1978	Indicated 1979[3]
	1977	1978				
	--- 1,000 acres ---			--- 1,000 cwt. ---		
Michigan	480	560	500	5,664	6,440	([7])
New York	32	42	39	352	428	([7])
Northwest[4]	430	488	464	6,248	7,315	([7])
Southwest[5]	163	194	198	1,409	1,746	([7])
California:						
Large lima	31	29	25	540	434	([7])
Baby lima	22	25	26	475	489	([7])
Other	116	156	151	1,872	2,265	([7])
Total California	169	210	202	2,887	3,188	([7])
Other States[6]	6	---	---	50	---	---
United States	1,280	1,494	1,403	16,610	19,117	([7])

[1] Includes beans grown for seed. [2] Cleaned basis. [3] Indicated as of June 30. [4] Nebraska, Montana, Idaho, Wyoming, Washington, Minnesota, and North Dakota. [5] Kansas, Colorado, New Mexico, and Utah. [6] Discontinued after 1977. [7] Available in August Crop Production.

Data from Acreage, ESCS, USDA.

through April exports of navy beans were 15 percent less than a year earlier. This suggests a relatively large carryover into 1979/80.

Dealer prices remained in the $16-to-$17-a-cwt. range from September into April. They rose to $18.25 late in April and to $19.50 early in June. By the end of June, prices stood at $22.50 a cwt.

The largest importer of navy beans so far this year is the United Kingdom. The Netherlands, Canada, Bulgaria, and Belgium also were volume importers.

Great Northerns

Prices of great northerns in Idaho and Nebraska have trended upward since September. By late June, they had reached $27 a cwt. Production in 1978, at 1.9 million cwt., was 16 percent greater than a year earlier. Exports from September 1978 through May 1979 were up 48 percent.

Heavy volume importers so far this season are France, Algeria, Yugoslavia, Switzerland, Angola, Venezuela, and Belgium.

Pintos

Dealer prices of pinto beans trended upward from $17.25 a cwt. in September to $22.50 in December. They subsequently dropped to $19.75 by late March. Since then, prices have increased, rising sharply in May and June. By the end of June, the dealer price was more than $27 a cwt. Export sales from September 1978 through April 1979 were nearly 2½ times greater than a year earlier.

Mexico, Colombia, the Netherlands, Angola, and the Dominican Republic have been the largest importers of pinto beans so far in 1978/79.

The Outlook

Based on reduced plantings and average yields, the price and supply picture for dry beans at this time suggests further price improvement to growers of the major classes. Plantings call for 6 percent less acreage this year. Michigan, the largest navy bean producer, has reduced plantings by 9 percent, and the Michigan acreage for harvest is down 11 percent. The recent export interest from the United Kingdom has tended to strengthen navy bean prices.

With only a 4-percent overall decrease in acreage for harvest in California, where many different classes of beans are grown, the price picture may differ very little relative to a year earlier. But prices for the major U.S. classes may be expected to average generally higher in 1979/80 than in 1978/79.

Table 6—Peas, dry field: Acreage, planted and harvested, annual 1977, 1978, and acreage for harvest 1979[1]

State	Acreage					
	Planted			Harvested		
	1977	1978	1979	1977	1978	For harvest 1979
	--- 1,000 acres ---					
Idaho	68.0	83.0	56.0	67.0	82.0	55.0
Washington	105.0	121.0	86.0	100.0	120.0	85.0
United States	173.0	204.0	142.0	167.0	202.0	140.0

[1] Excludes peas grown for seed.

Data from Acreage, ESCS, USDA.

Table 7—Commercially produced vegetables: Civilian per capita consumption, averages 1947-49, 1957-59, and 1965 to date

Period	Fresh equivalent					As percentage of annual total			
	Total fresh and processed	Fresh[1]	Processed[2]			Fresh	Processed		
			Total	Canned	Frozen		Total	Canned	Frozen
	Pounds					*Percent*			
1947-49	199.7	120.5	79.2	72.6	6.6	60.3	39.7	36.4	3.3
1957-59	199.7	104.1	95.6	81.1	14.5	52.1	47.9	40.6	7.3
Year									
1965	201.0	98.3	102.7	85.3	17.4	48.9	51.1	42.4	8.7
1966	201.5	95.9	105.6	86.7	18.9	47.6	52.4	43.0	9.4
1967	209.4	98.2	111.2	91.3	19.9	46.9	53.1	43.6	9.5
1968	214.9	101.2	113.7	92.7	21.0	47.1	52.9	43.1	9.8
1969	212.9	98.7	114.2	94.9	19.3	46.4	53.6	44.6	9.0
1970	213.8	99.2	114.6	94.0	20.6	46.4	53.6	44.0	9.6
1971	212.0	98.2	113.8	93.6	20.2	46.3	53.7	44.2	9.5
1972	216.0	99.3	116.7	96.3	20.4	46.0	54.0	44.6	9.4
1973	224.1	100.6	123.5	101.6	21.9	44.9	55.1	45.3	9.8
1974	224.7	102.9	121.8	100.9	20.9	45.8	54.2	44.9	9.3
1975	223.6	101.9	121.7	101.9	19.8	45.6	54.4	45.6	8.8
1976	226.2	102.7	123.5	103.0	20.5	45.4	54.6	45.5	9.1
1977	226.7	101.4	125.3	104.2	21.1	44.7	55.3	46.0	9.3
1978[3]	223.5	103.0	120.5	98.7	21.8	46.1	53.9	44.1	9.8

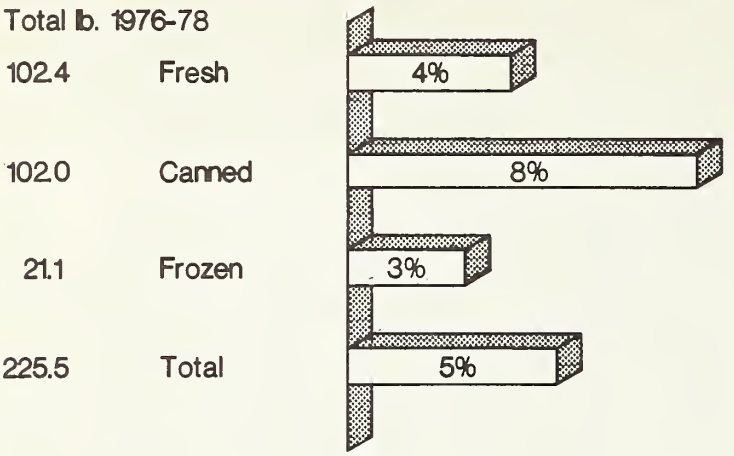
[1] Includes dehydrated onions and excludes melons. [2] Data includes pickles and sauerkraut in bulk; excludes canned and frozen potatoes, canned sweetpotatoes, canned baby foods and canned soups. [3] Preliminary.

Table 8—Potatoes, sweetpotatoes, dry edible beans, and dry field peas: Per capita consumption, primary distribution weight, averages 1947-49, 1957-59 and annual 1965 to date[1]

Period	Potatoes[2]	Sweet-potatoes[3]	Dry edible beans[4]	Dry field peas[5]
	Pounds			
1947-49	114	13.0	6.7	0.6
1957-59	107	8.3	7.7	.6
Year				
1965	108	6.2	6.6	.4
1966	118	6.3	6.3	.4
1967	108	5.8	6.9	.2
1968	115	5.7	6.4	.3
1969	117	5.7	6.9	.3
1970	118	5.6	5.9	.3
1971	119	4.9	5.9	.3
1972	119	5.1	6.3	.3
1973	117	5.1	6.4	.5
1974	114	5.5	6.7	.4
1975	122	5.5	6.5	.4
1976	116	5.4	6.2	.4
1977	122	5.0	6.1	.2
1978[6]	125	5.4	5.9	.4

[1] Civilian consumption only. [2] Farm weight basis, calendar years. Includes farm garden produce but not nonfarm. Includes table-stock and processed potatoes. [3] Includes canned sweetpotatoes. [4] Cleaned basis, calendar years. [5] Cleaned basis, crop years beginning approximately September of year indicated. [6] Preliminary.

Changes in Vegetable Consumption Per Capita Between, 1970-72 and 1976-78*

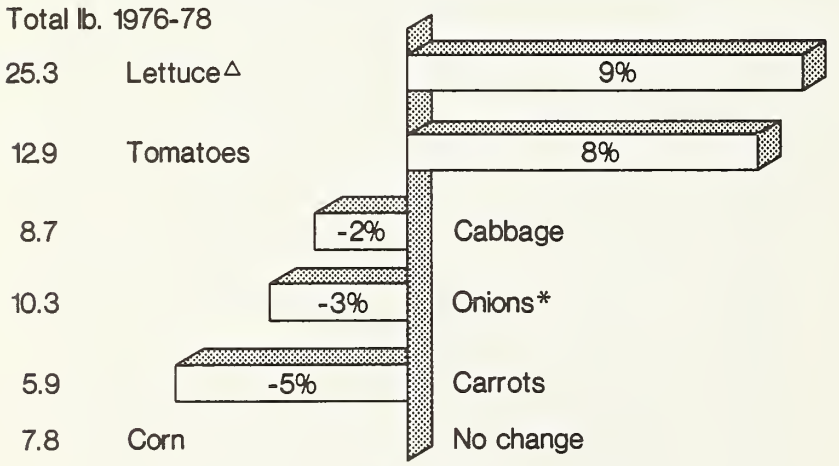


*Fresh weight basis; excludes potatoes, sweet potatoes and melons. Dehydrated onions included in fresh.

USDA

Neg. ESCS 634-79 (7)

Changes in Fresh Vegetable Consumption Per Capita Between 1970-72 and 1976-78

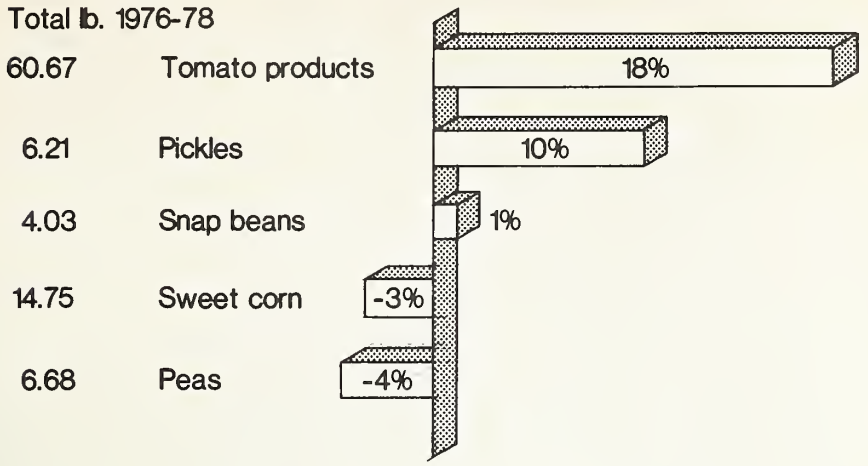


△Includes escarole. *Includes about 3 lb. of dehydrated onions.

USDA

Neg. ESCS 8866-79 (7)

Changes in Canned Vegetable Consumption Per Capita Between 1970-72 and 1976-78*

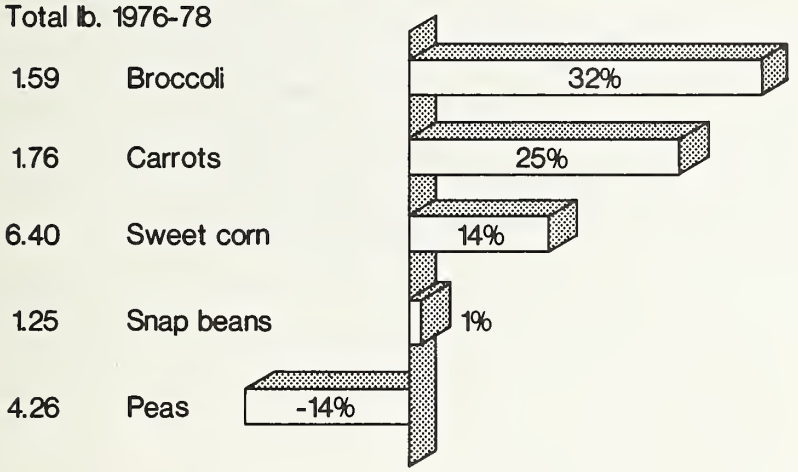


*Fresh weight basis.

USDA

Neg. ESCS 8875-79 (7)

Changes in Frozen Vegetable Consumption Per Capita Between 1970-72 and 1976-78*



*Fresh weight basis.

USDA

Neg. ESCS 8874-79 (7)

Table 9—Civilian per capita consumption of selected commercially produced fresh and processed vegetables [1]
United States, calendar years 1967-78

Commodity	Fresh equivalent basis											
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978[2]
	Pounds											
Asparagus												
Fresh	.40	.50	.40	.50	.40	.50	.40	.40	.40	.40	.30	.30
Canned	.80	.87	.83	.81	.73	.70	.84	.62	.64	.67	.48	.46
Frozen	.32	.30	.28	.28	.24	.19	.21	.19	.17	.21	.17	.17
Beans, lima[3]												
Fresh	.30	—	—	—	—	—	—	—	—	—	—	—
Canned	.43	.46	.52	.54	.50	.44	.44	.42	.37	.41	.48	.40
Frozen	1.53	1.56	1.33	1.50	1.35	1.45	1.46	1.32	1.14	1.00	1.12	1.05
Beans, snap												
Fresh	2.00	1.90	1.80	1.70	1.60	1.60	1.60	1.50	1.60	1.60	1.50	1.40
Canned	3.54	3.76	3.91	3.98	4.01	3.99	4.03	4.06	3.84	4.13	4.06	3.90
Frozen	1.07	1.18	1.14	1.24	1.22	1.26	1.34	1.27	1.04	1.35	1.18	1.22
Broccoli												
Fresh	.30	.40	.40	.50	.70	.70	.80	.80	1.00	1.10	1.30	1.30
Frozen	1.03	1.05	1.11	1.10	1.19	1.32	1.41	1.38	1.27	1.38	1.53	1.86
Cabbage												
Fresh	9.10	9.30	8.90	8.80	9.20	8.80	9.00	9.10	9.20	8.80	8.50	8.90
Canned[4]	2.23	2.56	2.30	2.37	2.47	2.19	2.19	2.40	2.11	2.24	2.22	2.10
Corn[5]												
Fresh	8.00	7.80	8.00	7.90	7.50	7.90	8.00	7.70	7.90	8.20	7.60	7.50
Canned	13.22	14.19	15.08	14.66	15.18	15.98	15.79	14.84	12.58	14.15	15.43	14.66
Frozen	5.93	5.87	5.35	5.96	5.41	5.41	5.88	5.78	5.69	5.77	6.56	6.88
Cucumbers												
Fresh	3.10	2.90	3.20	3.20	3.10	3.30	3.00	3.40	3.20	3.70	4.00	4.30
Canned[6]	5.42	5.74	5.76	5.50	5.65	5.83	5.93	5.79	5.83	6.24	6.12	6.27
Peas, green[3]												
Fresh	.10	—	—	—	—	—	—	—	—	—	—	—
Canned	7.39	7.56	7.49	7.06	6.86	6.87	7.71	6.35	6.26	6.57	7.01	6.45
Frozen	5.10	5.66	4.86	5.04	4.92	4.92	4.80	4.74	4.64	4.42	4.14	4.23
Spinach												
Fresh	.60	.60	.50	.50	.50	.40	.50	.50	.50	.60	.70	.50
Canned	.57	.65	.47	.62	.58	.64	.73	.69	.49	.47	.46	.55
Frozen	1.00	1.00	.96	.97	1.04	1.03	.96	1.13	.93	1.02	1.05	1.07
Tomatoes												
Fresh	12.40	11.90	11.90	12.30	11.40	12.20	12.60	12.00	12.10	12.70	12.50	13.40
Canned[7]	51.00	50.42	51.30	51.30	50.39	51.96	56.17	57.84	62.45	61.15	61.56	59.26

[1] Data for processed vegetables excludes quantities consumed in commercially produced soups, and baby foods and in canned wholesale mixtures such as peas and carrots and succotash. [2] Preliminary. [3] "In pod" basis. [4] Sauerkraut, canned and bulk. [5] "On-cob" basis. [6] Pickles, canned and bulk. [7] Including canned whole tomatoes and tomato products other than soup.

Table 10— Fresh vegetables and melons, commercial: Per capita consumption, farm weight, averages 1947-49, 1957-59, and 1965 to date[1]

Period	Tomatoes	Vegetables														
		Leafy, green and yellow														
		Artichokes	Asparagus	Lima beans (unshelled)	Snap beans	Broccoli	Brussels sprouts	Cabbage	Carrots	Kale	Lettuce	Green peas (unshelled)	Peppers	Spinach	Minor	Total
		- - - *Pounds* - - -														
1947-49	13.8	.2	1.0	.6	4.1	.9	.2	16.1	8.8	.2	18.6	.9	2.1	1.9	6.3	61.9
1957-59	12.4	.2	.8	.3	2.7	.4	.1	10.6	7.3	.2	20.3	.3	2.2	1.0	5.2	51.6
Year																
1965	12.0	.3	.6	.3	2.0	.3	.1	8.9	7.0	.1	21.7	.2	2.3	.6	4.6	49.0
1966	12.4	.3	.4	.3	1.9	.3	(2)	8.9	6.4	.1	21.6	.2	2.4	.6	4.0	47.4
1967	12.4	.4	.4	.3	2.0	.3	.1	9.1	6.5	.1	22.1	.1	2.6	.6	3.6	48.2
1968	11.9	.3	.5	(3)	1.9	.4	(2)	9.3	7.5	(3)	22.5	(3)	2.8	.6	5.5	51.3
1969	11.9	.3	.4	(3)	1.8	.4	(2)	8.9	6.0	(3)	22.5	(3)	2.6	.5	4.4	47.8
1970	12.3	.3	.5	(3)	1.7	.5	(2)	8.8	5.9	(3)	23.1	(3)	2.4	.5	4.7	48.4
1971	11.4	.4	.4	(3)	1.6	.7	(2)	9.2	6.1	(3)	23.2	(3)	2.5	.5	4.5	49.1
1972	12.2	.3	.5	(3)	1.6	.7	(2)	8.8	6.6	(3)	23.3	(3)	2.7	.4	4.6	49.5
1973	12.6	.3	.4	(3)	1.6	.8	(3)	9.0	6.7	(3)	23.9	(3)	2.8	.5	4.4	50.2
1974	12.0	.3	.4	(3)	1.5	.8	(2)	9.1	7.0	(3)	24.5	(3)	3.0	.5	4.3	51.4
1975	12.1	.3	.4	(3)	1.6	1.0	(2)	9.2	6.5	(3)	24.5	(3)	3.1	.5	4.3	51.4
1976	12.7	.4	.4	(3)	1.6	1.1	(2)	8.8	6.7	(3)	24.3	(3)	3.3	.6	3.7	50.9
1977	12.5	.3	.3	(3)	1.5	1.3	(2)	8.5	5.4	(3)	25.1	(3)	3.4	.7	3.8	50.3
1978[4]	13.4	.2	.3	(3)	1.4	1.3	(2)	8.9	5.7	(3)	26.6	(3)	3.5	.5	2.8	51.2

Period	Vegetables										Melons				Total vegetables and melons	Dehydrated onions
	Other										Total vegetables	Watermelons	Cantaloups	Total melons		
	Beets	Cauliflower[5]	Celery	Corn	Cucumbers	Egg plant	Garlic	Onions and shallots[6] [7]	Minor	Total						
	- - - *Pounds* - - -															
1947-49	1.3	3.3	8.2	8.0	2.6	.4	.2	12.0	8.8	44.8	120.5	17.8	9.6	27.4	147.9	
1957-59	.7	1.3	8.0	8.3	2.8	.4	.3	11.7	6.6	40.1	104.1	16.9	8.2	25.1	129.2	
Year																
1965	.5	1.0	6.7	8.1	3.1	.4	.4	11.4	5.7	37.3	98.3	15.7	7.9	23.6	121.9	
1966	.4	1.0	6.9	7.4	3.0	.4	.3	11.5	5.2	36.1	95.9	14.8	7.3	22.1	118.0	
1967	.4	1.0	6.8	8.0	3.1	.4	.4	12.1	5.4	37.6	98.2	14.2	8.1	22.3	120.5	
1968	(3)	1.0	7.2	7.8	2.9	.4	.5	11.9	6.3	38.0	101.2	14.4	8.6	23.0	124.2	
1969	(3)	.9	7.3	8.0	3.2	.4	.5	12.5	6.4	39.2	98.9	13.8	9.1	22.9	121.8	
1970	(3)	.7	7.2	7.9	3.2	.4	.5	11.9	6.3	38.1	98.8	14.4	8.9	23.3	122.1	
1971	(3)	.7	7.3	7.5	3.1	.4	.3	10.1	6.1	35.5	96.0	14.1	8.5	22.6	118.6	2.5
1972	(3)	.8	7.1	7.9	3.3	.5	.4	9.9	5.7	35.6	97.3	13.2	8.7	21.9	119.2	2.0
1973	(3)	.8	7.6	8.0	3.0	.6	.5	9.2	5.7	35.4	98.2	13.8	8.0	21.8	120.0	2.4
1974	(3)	.8	7.4	7.7	3.4	.5	.7	10.5	5.6	36.6	100.0	11.9	7.0	18.9	118.9	2.8
1975	(3)	.9	7.0	7.9	3.2	.5	.8	9.8	5.4	35.5	99.0	12.2	6.9	19.1	118.1	3.0
1976	(3)	1.0	7.5	8.2	3.7	.7	.5	10.1	5.1	36.8	100.4	13.5	7.0	20.5	120.9	2.3
1977	(3)	1.1	7.2	7.6	4.0	.6	.6	10.1	4.7	35.9	98.7	13.5	7.7	21.3	119.8	2.7
1978[4]	(3)	1.0	7.0	7.5	4.3	.5	.8	10.6	4.1	35.8	100.3	13.2	9.1	22.3	122.6	2.6

[1] Excludes quantities produced in home gardens. [2] Less than 0.05 pound. [3] Included in minor vegetables. [4] Preliminary. [5] Close trim basis since 1954; slight trim basis in prior years. [6] Includes 0.1 pound of shallots each year through 1958; 1959 through 1967 less than 0.05 pound; since 1968, included in minor vegetables. [7] Excludes dehydrated onions beginning 1971.

Table 11—Canned vegetables: Per capita consumption, processed weight, averages 1947-49, 1957-59 and annual 1965 to date[1]

Period	Leafy, green and yellow vegetables							Tomato products						Other vegetables					
	Asparagus	Lima beans	Snap beans	Carrots	Peas	Pumpkin and squash	Spinach	Whole tomatoes	Catsup and chili sauce	Paste and sauce	Pulp and puree	Tomato and other vegetable juices[2]	Beets	Corn	Pickles	Sauerkraut	Sweet potatoes	Other[3]	Total
	Pounds																		
1947-49 . . .	.6	.4	2.8	.4	5.7	.6	1.1	4.3	2.5	2.4	.9	4.2	1.1	5.2	3.3	1.8	.4	1.4	39.1
1957-59 . . .	.8	.4	4.1	.5	4.8	.6	1.0	4.6	3.5	3.4	.7	5.0	1.4	5.3	4.5	1.6	1.0	1.6	44.8
Year																			
1965	.8	.3	4.8	.6	4.1	.5	.8	4.5	5.0	[4]3.9	.8	4.7	1.4	5.5	6.2	1.4	1.3	2.1	48.7
1966	.7	.2	5.1	.7	4.2	.5	.7	4.6	4.8	[4]4.2	1.0	4.4	1.4	5.2	6.6	1.4	1.2	2.1	49.0
1967	.7	.4	5.1	.7	4.1	.5	.7	4.6	4.7	[4]5.0	1.0	4.2	1.4	5.4	7.3	1.4	1.1	2.3	50.6
1968	.7	.3	5.5	.6	4.2	.6	.8	4.9	[5]9.8		1.1	4.0	1.3	5.8	7.7	1.6	1.3	2.1	52.3
1969	.7	.4	5.7	.6	4.1	.5	.6	4.9	[5]10.1		1.0	4.1	1.5	6.1	7.7	1.4	1.5	2.8	53.7
1970	.7	.4	5.8	.6	3.9	.5	.8	4.8	[5]10.1		1.0	4.1	1.5	5.9	7.4	1.5	1.2	2.7	52.9
1971	.6	.4	5.9	.6	3.8	.5	.7	4.9	[5]9.9		1.0	3.9	1.4	6.2	7.6	1.6	1.2	4.1	54.3
1972	.6	.3	5.8	.8	3.8	.6	.8	5.1	[5]10.2		1.1	3.7	1.5	6.5	7.8	1.4	1.1	4.1	55.2
1973	.7	.3	5.9	.6	4.3	.6	.9	5.8	[5]11.3		1.1	3.3	1.3	6.4	8.0	1.4	1.3	4.5	57.7
1974	.5	.3	5.9	.6	3.5	.6	.9	5.0	[5]12.0		1.2	3.6	1.3	6.0	7.8	1.5	1.5	4.7	56.9
1975	.5	.3	5.6	.6	3.4	.6	.6	4.9	[5]13.5		1.1	3.6	1.3	5.1	7.8	1.3	.9	4.0	55.1
1976	.6	.3	6.0	.5	3.6	.5	.6	5.2	[5]13.3		1.1	2.8	1.4	5.7	8.4	1.4	.9	3.4	55.7
1977	.4	.4	5.9	.6	3.9	.4	.6	5.0	[5]13.6		.9	3.1	1.4	6.3	8.0	1.4	.8	3.2	55.9
1978[6] . . .	.4	.3	5.7	.5	3.6	.4	.7	5.1	[5]12.8		1.0	3.0	1.4	6.0	8.4	1.3	1.0	2.6	54.2

[1] Excludes soups and baby food. Civilian consumption only. [2] Based on information available for 1944-46, tomato juice comparises approximately 85 percent of the total, combination vegetable juices 13 percent, and other vegetable juices 2 percent. Combination vegetable juice contains approximately 70 percent or more tomato juice. [3] Includes miscellaneous greens, pimentos, potatoes, mixed vegetables, and all items, especially in earlier years, for which no separate data are available. [4] Estimated. [5] Estimate combines paste, sauce, catsup and chili sauce. [6] Preliminary.

Table 12—Vegetables, frozen: Per capita consumption, processed weight, averages 1947-49, 1957-59 and annual 1965 to date[1]

Period	Leafy, green and yellow vegetables												Other vegetables					Potato products	Total[3]
	Asparagus	Snap beans	Lima beans	Carrots	Peas	Peas and carrots	Pumpkin and squash	Broccoli	Brussels sprouts	Southern greens	Spinach	Other[2]	Cauliflower	Corn cut-basis	Succotash	Onions	Rhubarb		
	- - - Pounds - - -																		
1947-49	.13	.28	.42	.07	.82	.05	.05	.16	.08	([4])	.27	.10	.08	.23	.04	([4])	.04	.04	2.86
1957-59	.17	.77	.71	.26	1.61	.12	.10	.55	.19	([4])	.57	.61	.17	.65	.06	([4])	.03	1.56	8.13
Year																			
1965	.15	.91	.69	.51	1.98	([4])	.07	.68	.22	([4])	.62	.89	.20	1.13	([4])	([4])	.03	5.72	13.80
1966	.16	1.06	.70	.55	2.05	([4])	.10	.71	.20	([4])	.68	1.08	.25	1.26	([4])	([4])	.03	6.93	15.76
1967	.17	.90	.73	.66	1.88	([4])	.10	.77	.20	([4])	.70	1.07	.25	1.60	([4])	([4])	.03	7.58	16.64
1968	.16	1.00	.74	.73	2.08	([4])	.12	.79	.18	([4])	.70	1.12	.26	1.59	([4])	.16	.03	8.50	18.16
1969	.15	.97	.63	.72	1.78	([4])	.13	.84	.23	([4])	.67	1.02	.30	1.44	([4])	.18	.04	9.84	18.94
1970	.14	1.05	.71	.76	1.86	([4])	.13	.83	.22	([4])	.68	1.07	.30	1.61	([4])	.25	.04	11.10	20.75
1971	.12	1.04	.64	.74	1.81	([4])	.14	.90	.22	([4])	.73	1.18	.35	1.47	([4])	.34	.04	12.12	21.84
1972	.10	1.07	.69	.81	1.81	([4])	.10	.99	.20	([4])	.72	1.12	.35	1.46	([4])	.51	.04	12.25	22.22
1973	.11	1.14	.69	.99	1.76	([4])	.16	1.06	.23	([4])	.67	1.32	.37	1.60	([4])	.53	.06	13.27	23.96
1974	.10	1.07	.63	1.00	1.74	([4])	.10	1.04	.26	([4])	.78	.96	.41	1.56	([4])	.49	.06	13.21	23.41
1975	.09	.88	.55	.89	1.71	([4])	([4])	.95	.23	.34	.65	.89	.35	1.53	([4])	.59	([4])	13.89	23.54
1976	11	1.14	.47	.92	1.63	([4])	([4])	1.04	.25	.25	.71	1.12	.39	1.56	([4])	.66	([4])	14.76	25.01
1977	.09	1.00	.53	.99	1.52	([4])	([4])	1.15	.24	.35	.73	.87	.41	1.77	([4])	.69	([4])	15.98	26.32
1978[5]	.09	1.03	.50	1.00	1.55	([4])	([4])	1.40	.28	.31	.75	.90	.48	1.86	([4])	.72	([4])	17.57	28.44

[1] Civilian consumption only. [2] Included with leafy, green, and yellow because most items included are considered to be green. [3] Computed from unrounded data. [4] Included with "other". [5] Preliminary.

Table 13— Vegetables, fresh: Representative prices for stock of generally good quality and condition (U.S. No. 1 when available), New York, Chicago, and shipping point, indicated periods, 1978 and 1979

Market and commodity	State of origin	Unit	Tuesday					
			1978			1979		
			May 9	June 13	July 11	May 8	June 12	July 10
			--- *Dollars* ---					
Terminal markets:								
New York								
Beans, snap, green	New Jersey	Bu. basket	---	---	6.50	---	---	9.00
Broccoli	California	14-bchs., crt. & ctn.	---	9.25	8.25	7.75	10.00	10.00
Cabbage								
Domestic, round type	New Jersey	Various used crates	---	---	6.25	---	---	4.25
Cantaloups	California	36's jumbo crt.	---	17.50	23.50	---	22.00	20.00
Carrots, topped, washed	California	48-1lb. film bag ctn.	11.50	8.50	12.00	7.75	8.50	12.00
Cauliflower	California	Carton 12's	11.50	11.50	13.50	---	13.00	12.00
Celery								
Pascal	California	2-3 doz., crt.	16.00	23.00	18.00	11.50	16.50	12.50
Lettuce, Iceberg	California	2 doz., ctn.	12.50	11.50	7.75	7.25	7.75	7.00
Spinach, Savoy	New Jersey	Bu. basket	---	---	---	---	---	---
Tomatoes	Ohio	8 lb. bskt., med.	---	---	---	---	---	---
Chicago								
Broccoli	California	14's crt. & ctn.	7.75	---	7.75	7.25	8.25	8.75
Cabbage								
Domestic, round type	Illinois	Various used crates	---	---	6.50	---	---	4.25
Cantaloups	California	36's jumbo crt.	---	16.50	20.00	---	12.00	---
Carrots, topped, washed	California	48-1 lb. film bag, ctn.	8.00	7.25	11.50	8.25	8.75	10.15
Cauliflower	California	Film wrpd., ctns, 12's	11.00	11.50	9.00	10.00	12.00	9.60
Celery								
Pascal	California	2-3 doz., crt.	14.00	18.50	15.00	13.50	15.00	11.25
Pascal	Michigan	2-4 doz., crt.	---	---	---	---	---	---
Cucumbers	Illinois	Bu. basket	---	---	18.00	---	---	---
Honeydews	California	2/3-flat crt. 5-8's	---	---	---	---	---	7.25
Lettuce, Iceberg	California	2 doz. heads, ctn.	13.25	10.75	8.25	6.50	6.75	6.60
Spinach, flat type	Illinois	Bu. basket	---	4.50	---	---	---	---
Tomatoes	Illinois	10-lb. baskt., med-lge.	5.00	---	---	---	---	---
			Week ended					
			1978			1979		
			May 13	June 10	July 8	May 12	June 9	July 17
			--- *Dollars* ---					
F.o.b. shipping point:								
Onions, medium	Texas	50 lb. sack Grano	---	3.60	---	---	---	---
Onions, medium	California	50 lb. sack Grano	3.03	3.00	3.25	---	---	---
Watermelons	Florida	25 lb. av. and larger per cwt.	---	5.07	3.66	---	4.50	3.72

Source: Market News Report, AMS, USDA.

Table 14— Fresh Vegetables: Retail price, marketing margin, and grower and packer return per unit, sold in New York City, indicated months, 1978 and 1979

Commodity, month, and retail unit	Retail price[1]	Marketing margin		Grower and packer return (Fob shipping point prices)[2 3]	
		Absolute	Percentage of retail price	Absolute	Percentage of retail price
	Cents	*Cents*	*Percent*	*Cents*	*Percent*
Carrots (lb.)					
April 1979	34.0	23.2	68	10.8	32
March 1979	36.0	22.7	63	13.1	37
April 1978	31.3	22.7	73	8.6	27
Celery (lb.)					
April 1979	23.1	16.5	71	6.6	29
March 1979	30.2	19.6	65	10.6	35
April 1978	39.6	26.3	66	13.3	34
Corn, sweet (doz. ears)					
April 1979	342.0	227.6	67	114.4	33
March 1979	360.0	222.7	62	137.3	38
April 1978	283.8	174.0	61	109.8	39
Cucumbers (lb.)					
April 1979	58.9	29.5	50	29.4	50
March 1979	52.4	31.1	59	21.3	41
April 1978	63.3	28.8	45	34.5	55
Lettuce (head)					
April 1979	54.0	38.3	71	15.7	29
March 1979	84.0	47.0	56	37.0	44
April 1978	64.7	42.3	65	22.4	35
Onions, dry yellow (lb.)					
April 1979	26.0	19.3	74	6.7	26
March 1979	27.0	19.3	71	7.7	29
April 1978	22.8	12.9	57	9.9	43
Peppers, green (lb.)					
April 1979	89.0	46.8	53	42.2	47
March 1979	74.0	44.2	60	29.8	40
April 1978	77.8	26.8	34	51.0	66
Tomatoes, vine-ripe (lb.)					
April 1979	84.0	35.3	42	48.7	58
March 1979	69.0	23.1	33	45.9	67
April 1978	78.2	53.5	68	24.7	32

[1] Retail prices for 1978 BLS, 1979 N. Y. State Department of Agriculture. [2] For quantity of product equivalent to retail unit sold to consumers; because of waste and spoilage during marketing, equivalent quantity exceeds retail unit. [3] Production areas: Carrots-CALIFORNIA, Celery-CALIFORNIA, Corn-FLORIDA, Cucumbers-FLORIDA, ARIZONA (Mar. '78), Lettuce-CALIFORNIA, Onions-TEXAS, Peppers-FLORIDA, Tomatoes-FLORIDA.

Table 15—Fresh vegetables: Representative truck rates for selected fresh vegetables, Jan-June 1978-79[1]

Commodity, area, and city	1978						1979					
	Jan.	Feb.	Mar	Apr.	May	June	Jan.	Feb.	Mar.	Apr.	May	June
	Dollars per package											
Cabbage (wirebound crate)												
Southern Florida to:												
Atlanta	.88	NA	.75	.88	1.25	—	NA	NA	NA	.88	NA	—
Chicago	1.85	1.88	1.50	1.62	2.05	—	2.00	2.00	2.00	2.00	2.18	—
New York City	1.78	1.82	1.60	1.70	1.95	—	1.90	1.90	1.90	1.90	2.08	—
Rio Grande Valley, Tex. to:												
Chicago	1.96	1.96	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.22	2.30	2.30
New York City	2.65	2.65	2.89	2.89	2.89	2.89	2.89	2.89	2.89	3.20	3.35	3.35
Carrots (48/1 lb. film)												
Imperial Valley, Calif. to:												
Chicago	2.62	2.92	2.61	2.61	2.77	—	2.30	2.30	2.30	2.61	2.54	—
New York City	3.38	4.00	3.69	3.69	4.00	—	3.07	3.07	3.07	3.69	3.46	—
Seattle	1.69	1.85	1.38	1.38	1.54	—	1.38	1.38	1.69	1.28	—	—
Rio Grande Valley, Tex. to:												
Chicago	1.55	1.55	1.78	1.78	1.79	1.79	1.79	1.79	1.79	2.00	2.05	2.05
New York City	NA	NA	2.73	2.42	2.73	2.73	2.73	2.73	2.73	3.02	3.15	3.15
Washington, D.C.	NA	NA	2.42	2.42	2.42	2.42	2.41	2.41	2.41	2.68	2.80	2.80
Celery (wirebound crate)												
Southern California to:												
Chicago	2.75	2.85	2.85	2.75	2.75	2.80	2.50	2.50	2.50	2.70	3.40	3.40
New York City	3.70	3.70	3.75	3.50	3.50	3.90	3.30	3.25	3.20	3.95	4.30	4.35
Southern Florida to:												
Atlanta	1.12	1.05	1.05	1.02	1.25	1.25	1.38	NA	1.50	1.50	1.80	1.80
Detroit	1.85	1.90	1.90	1.92	2.05	2.05	1.80	2.00	2.00	2.15	2.15	2.18
New York City	1.78	1.85	1.82	1.88	1.95	1.95	1.90	1.90	1.90	2.05	2.05	2.05
Washington, D.C.	1.70	1.70	1.68	1.72	1.82	1.82	1.80	1.80	1.80	1.95	1.95	1.95
Corn (wirebound crate)												
Southern Florida to:												
Boston	1.55	1.60	1.60	1.60	1.70	1.70	1.67	1.67	1.68	1.82	1.82	1.82
Detroit	1.52	1.58	1.55	1.60	1.75	1.75	1.68	1.70	1.68	1.82	1.82	1.82
New York City	1.42	1.50	1.45	1.55	1.60	1.60	1.57	1.58	1.58	1.75	1.75	1.72
Lettuce (24 head ctn)												
Imperial Valley, Calif. to:												
Atlanta	1.88	2.00	1.87	2.00	—	—	2.00	2.00	2.00	2.25	—	—
Chicago	2.13	2.37	2.12	2.00	—	—	1.87	1.87	1.87	2.13	—	—
New York City	2.75	3.25	3.00	3.38	—	—	2.50	2.50	2.50	3.00	—	—
Onions, dry (50-lb. sack)												
Western and Central New York to:												
Boston	.55	.60	.60	.60	.55	—	.75	.75	.75	.75	.75	—
New York City	.55	.55	.60	.60	.55	—	.65	.65	.70	.70	.70	—
Potatoes (100-lb. sack)												
Idaho Falls, Idaho to:												
Atlanta	3.50	3.50	3.50	3.45	—	—	3.75	3.75	3.75	3.75	3.88	4.12
Chicago	2.70	2.88	2.88	2.70	—	—	2.90	2.90	3.00	3.12	3.12	3.30
Los Angeles	1.30	1.40	1.40	1.35	—	—	1.50	1.50	1.55	1.55	1.55	1.55
New York City	4.50	4.50	4.38	4.62	—	—	4.75	4.75	4.88	4.88	4.88	5.12
Yakima, Wash. to:												
Atlanta	4.30	4.30	4.25	4.25	—	—	NA	NA	4.35	4.50	4.50	4.25
Chicago	3.50	3.50	3.38	3.38	—	—	NA	NA	3.62	3.62	3.77	3.88
Los Angeles	1.62	1.55	1.55	1.55	—	—	NA	NA	1.55	1.55	1.75	—
New York City	5.25	5.25	5.25	5.25	—	—	NA	NA	5.38	5.38	5.35	5.60
Presque Isle, Maine to:												
Boston	1.00	1.00	1.05	1.05	1.10	1.10	1.10	1.10	1.10	1.10	1.20	—
New York City	1.50	1.50	1.60	1.60	1.70	1.70	1.70	1.70	1.70	1.70	1.80	—
Western and Central New York to:												
Atlanta	1.65	1.65	1.65	1.55	1.55	—	2.20	2.20	2.25	2.25	2.25	—
Boston	1.10	1.10	1.20	1.10	1.10	—	1.50	1.50	1.50	1.50	1.50	—
New York	1.10	1.20	1.10	1.00	1.10	—	1.30	1.30	1.40	1.40	1.40	—

[1] Reported from a sample of shippers and/or truck brokers in specified areas for shipments during the first week of month.

NA—Not available.

Table 16— Fresh vegetables: Representative rail rates for selected vegetables, January-June 1978-79

	1978						1979					
	Jan.	Feb.	Mar.	Apr.	May	June	Jan.	Feb.	Mar.	Apr.	May	June
	--- Dollars per package ---											
Carrots (48/lb. carton)												
Salinas, California to:												
Chicago	2.06	2.06	2.06	2.06	2.06	2.06	2.30	2.30	2.46	2.46	2.46	2.46
New York City	2.87	2.87	2.87	2.87	2.87	2.87	3.20	3.20	3.43	3.43	3.43	3.43
Rio Grand Valley, Texas to:												
Chicago	1.46	1.46	1.46	1.46	1.46	1.46	1.63	1.63	1.64	1.64	1.64	1.64
New York City	1.83	1.83	1.83	1.83	1.83	1.83	2.05	2.05	2.06	2.06	2.06	2.06
Lettuce (24 head carton)												
Salinas, California to:												
Baltimore	2.49	2.49	2.49	2.49	2.49	2.49	2.78	2.78	2.97	2.97	2.97	2.97
Chicago	1.90	1.90	1.90	1.90	1.90	1.90	2.12	2.12	2.26	2.26	2.26	2.26
New York City	2.49	2.49	2.49	2.49	2.49	2.49	2.78	2.78	2.97	2.97	2.97	2.97
Potatoes (100/lb. sack)												
Bakersfield, California to:												
Chicago	3.89	3.89	3.89	3.89	3.89	3.89	4.35	4.35	4.66	4.66	4.66	[1] 3.77
Idaho Falls to:												
Atlanta	3.48	3.48	3.48	3.48	3.48	3.48	3.46	3.46	3.49	3.49	3.49	3.49
Chicago	3.23	3.23	3.23	3.23	3.23	3.23	[2] 2.84	2.84	2.87	2.87	2.87	2.87
Los Angeles	1.77	1.77	1.77	1.77	1.77	1.77	2.28	2.28	2.30	2.30	2.30	2.30
New York City	4.17	4.17	4.17	4.17	4.17	4.17	4.65	[2] 4.12	4.15	4.15	4.15	4.15
Yakima, Washington to:												
Atlanta	5.09	5.09	5.09	5.09	5.09	5.09	5.58	5,58	[3] 3.91	3.91	3.91	3.91
Chicago	3.75	3.75	3.75	3.75	3.75	3.75	4.19	4.19	4.22	[3] 3.26	3.26	3.26
New York City	4.62	4.62	4.62	4.62	4.62	4.62	5.16	5.16	5.20	[3] 4.53	4.53	4.53
Grand Forks, North Dakota to:												
Chicago	1.90	1.90	1.90	1.90	1.90	1.90	1.98	1.98	2.00	2.00	2.00	2.00

[1] Minimum weight changes from 40,000 to 80,000 pounds. [2] Minimum weight changes from 50,000 to 80,000 pounds. [3] Minimum weight changes from 40,000 to 70,000 pounds.

Table 17—Canned vegetables: Commercial pack and canners' seasonal supply, shipments to latest month; and total seasonal shipments, selected commodities

Commodity and season	Carryover	Pack	Seasonal supply	Shipments to latest month	Total seasonal shipments
			Million cases 24/303's		
Asparagus					
1974-75	1.2	5.6	6.8	[1] 2.6	4.4
1975-76	2.4	3.6	6.0	[1] 3.1	4.8
1976-77	1.1	3.6	4.7	[1] 2.4	4.4
1977-78	.3	3.7	4.0	1.4	3.4
1978-79	.6	3.4	4.0	N.A.	3.1
1979-80	.9	N.A.	N.A.	N.A.	N.A.
Beans, lima					
1974-75	.2	2.5	2.7	[3] 2.2	2.5
1975-76	.2	3.7	3.9	[3] 2.6	3.0
1976-77	1.0	2.8	3.8	[3] 2.7	55.3
1977-78	.6	2.7	3.3	[3] 2.8	3.0
1978-79	.3	3.4	3.7	N.A.	N.A.
Beans, snap					
1974-75	5.2	62.3	67.5	[3] 52.1	52.2
1975-76	15.3	55.4	70.7	[3] 54.5	57.1
1976-77	13.6	47.4	61.0	[3] 53.2	55.3
1977-78	5.7	54.5	60.2	[3] 52.7	55.2
1978-79	5.0	57.1	62.1	N.A.	N.A.
Beets					
1974-75	.9	14.8	15.7	[4] 9.8	11.6
1975-76	4.0	13.4	17.4	[4] 9.4	12.4
1976-77	5.1	9.2	14.3	[4] 9.4	11.6
1977-78	2.6	11.3	13.9	[4] 9.6	11.8
1978-79	2.2	12.8	15.0	10.1	N.A.
Carrots					
1974-75	2.2	7.2	9.4	[4] 4.8	5.5
1975-76	3.9	5.0	8.9	[4] 5.3	6.3
1976-77	2.6	5.3	7.9	[4] 5.4	6.2
1977-78	1.8	6.0	7.8	[4] 5.1	5.6
1978-79	2.1	6.6	8.7	6.0	N.A.
Corn, sweet					
1974-75	3.9	46.4	50.3	[3] 42.6	45.2
1975-76	5.1	57.5	62.6	[3] 49.2	52.9
1976-77	9.7	54.7	64.4	[3] 51.7	54.7
1977-78	9.7	56.3	66.0	[3] 55.2	58.4
1978-79	7.6	57.9	65.5	N.A.	N.A.
Peas, green					
1974-75	1.5	33.1	34.6	[3] 30.0	30.0
1975-76	4.5	35.2	39.7	[3] 31.3	31.3
1976-77	8.4	31.9	40.3	[3] 32.6	32.6
1977-78	7.7	30.2	37.9	[3] 33.6	33.6
1978-79	4.4	25.3	29.7	N.A.	N.A.

[1] August 1. [2] May 1. [3] June 1. [4] April 1. N.A. = Not available.

National Food Processors Association.

Table 18— Vegetables, frozen: United States commercial packs 1977 and 1978, and cold storage holdings, July 1 with comparisons

Commodity	Packs		Cold storage holdings		
	1977	1978	July 1, 1977	July 1, 1978	July 1, 1979[1]
	--- Million pounds ---				
Asparagus	22	15	20	11	19
Beans, lima:					
Fordhook	45	38	9	10	10
Baby	92	81	22	33	40
Total	137	119	31	43	49
Beans, snap:					
Regular cut	142	161	23	26	45
French cut	83	95	10	15	25
Wax	6	7	([2])	([2])	([2])
Total	231	263	33	41	70
Broccoli	314	277	109	105	101
Brussels sprouts	57	71	9	16	22
Carrots	264	239	49	97	82
Cauliflower	97	128	10	21	43
Corn, cut	261	303	93	87	83
Corn-on-cob	265	307	37	70	102
Mixed vegetables	([2])	([2])	31	30	41
Mushrooms	10	9	([2])	([2])	([2])
Onions	153	154	21	29	22
Peas	334	358	162	160	176
Peas and carrots	([2])	([2])	11		11
Pumpkin and squash	25	25	([2])	([2])	24
Rhubarb	9	5	([2])	([2])	([2])
Southern greens[3]	82	72	32	41	25
Spinach	168	147	117	88	107
Okra	42	46	8	24	25
Peas, blackeye	36	37	6	11	9
Miscellaneous vegetables	116	137	117	141	138
Total[4]	2,623	2,712	897	1,028	1,151
French fried potatoes	3,134	3,265	771	838	843
Other frozen potatoes	488	583	115	117	132
Total frozen potatoes	3,623	3,849	886	955	974
Grand total[4]	6,246	6,561	1,784	1,983	2,125

[1] Preliminary. [2] Included in miscellaneous vegetables. [3] Includes collards, kale, mustards, turnips green/turnips. [4] May not add due to rounding.

Pack data from American Frozen Food Institute. Stocks from Cold Storage Report, ESCS, USDA, issued monthly.

Table 19—Potatoes: Prices f.o.b. shipping points and wholesale price at New York and Chicago, U.S. No. 1 indicated periods 1978 and 1979

Item	State	Week ended					
		1978			1979		
		May 13	June 10	July 8	May 12	June 9	July 14
		- - - Dollars per 100 lb. sack - - -					
F.o.b. shipping points							
Kern County							
Long Whites	California	---	7.65	9.25	---	3.55	3.25
Hi Plains-Panhandle Dist.							
Round Reds	Texas	---	---	---	---	---	---
Southern points							
Rounds Reds	Alabama	---	---	10.00	---	---	5.00
Round Whites	Virginia	---	---	8.38	---	---	3.90
		Tuesday nearest mid-month					
		1978			1979		
		May 9	June 13	July 11	May 8	June 12	July 10
		- - - Dollars per 100 lb. sack - - -					
Terminal markets							
New York							
Long Whites	California	---	14.50	8.50	---	11.50	6.50
Katahdin, 2" min.	Maine	6.00	8.70	---	6.30	7.30	3.75
		- - - Dollars per 100 lb. sack - - -					
Chicago							
Long Whites	California	---	12.38	13.75	---	10.00	9.75

F.o.b. prices are the simple averages of the mid-point of the range of daily prices. Market prices are for Tuesday of each week, and are submitted by Market News representatives to the Fruit and Vegetable Division of AMS.

Table 20—Sweetpotatoes: Representative wholesale price (wholesale lots) at New York and Chicago for stocks of generally good merchantable quality and condition (U.S. No. 1, when available) indicated periods, 1978 and 1979

Item	State	Tuesday nearest mid-month					
		1978			1979		
		May 9	June 13	July 11	May 8	June 12	July 10
		- - - Dollars per 50 lb. container - - -					
Terminal markets							
New York							
Porto Rico, cured	North Carolina	11.50	---	20.00	---	---	---
Chicago							
Porto Rico, cured	Louisiana	---	---	---	8.83	---	---

Prices submitted for Tuesday of each week by the Market News representative at New York and Chicago.

SIMULATION OF THE U.S. LETTUCE INDUSTRY: AN EXAMINATION OF THE EFFECTS OF INCREASED WAGES

By Michael D. Hammig and Ron C. Mittelhammer*

ABSTRACT: A simulation model of the U.S. lettuce industry was constructed to predict future outcomes under assumed likely market conditions and to evaluate the effect of unique changes in factors affecting the market on the course of market activity. Predictions of production, consumption, and prices were presented for 1979-83. The unique effect of a substantial rise in wages paid to harvest laborers was predicted and compared to baseline projections. Results indicate, for example, that a 40-percent increase in wages in 1979, with 7 percent-increases in following years, would cause the lettuce price to rise about 7 percent above prices that would otherwise prevail. Concurrently, returns to growers would rise by a large enough proportion to suggest that the bulk of increased costs would be passed forward to marketing firms and consumers.

KEYWORDS: Lettuce, simulation, wages, imperfect competition, market.

Introduction

Lettuce is the United States' most important fresh market vegetable crop in terms of value. At times during 1978, prices for lettuce surpassed $16 a cwt., and the total value of the crop exceeded $662 million. Lettuce production is highly concentrated geographically, with the overwhelming majority of production occurring in California and Arizona.

USDA (2) figures indicate that the bulk of the lettuce crop is produced in California: Monterey County in the spring and summer and Imperial County in the fall and winter. In 1978, California accounted for 73.6 percent of the total U.S. lettuce production. Arizona was a distant second, accounting for 14.0 percent of total lettuce production.

California is the only State in which lettuce production is commercially significant throughout all four growing seasons. Arizona does not produce in the summer. Florida and Texas production is significant in the fall and winter. In the summer, commercial production of lettuce achieves its greatest geographical diversity, with Colorado, New York, Wisconsin, Michigan, Washington, New Jersey, and Ohio all producing significant crops.

Canada, the major export market for U.S. lettuce, has significant production only in the summer. Consequently, U.S. exports of lettuce decline considerably during that period.

Given the rather concentrated nature of lettuce sales, a quarterly market model was designed with the potential for representing both imperfectly competitive pricing and perfectly competitive pricing in the lettuce industry.[1] The model was useful for predicting lettuce prices, quantity flows, acreage planted and harvested, and yields, all on a quarterly basis.

Function of the Analytical Model

To quantitatively analyze a commodity market it is first necessary to simplify the market structure by defining a manageable subset of important market features. Then, by examining the interrelationships among the important market components, understanding of overall market operations can be improved.

To understand market operations, a mathematical "model" of the market that includes the full set of interactions is helpful. Through the use of such models and computer solution procedures, the effects on the market of selected economic stimuli can be simulated and assessed.

There are obvious limitations to the simulation approach. Simplification and mathematical

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[1]According to unpublished data from the State of California Iceberg Lettuce Research Board, eight producers have at times supplied nearly one-half of California's lettuce production.

representation of market operations involve an abstraction from the true situation. The resulting model cannot be expected to perfectly forecast all ramifications of a given change in the system. The degree of accuracy of simulation results depends on the degree to which the model accurately reflects the real situation. Agricultural commodity models can lose accuracy because of the difficulty in modeling the biological nature of the production process. Weather, disease, and other noneconomic factors affecting production are difficult to predict.

However, given its limitations, the simulation approach can be used to predict trends that ensue from a given change in the system. Interrelationships among economic forces at work in the market, though not clearly observable intuitively, can be evaluated through the simulation model, and likely directions of future events can be predicted.

The simulation model used to generate the results presented in this paper was developed to represent the U.S. fresh lettuce industry. Data on industry activity were collected on a quarterly basis for the period 1954-77, and the model was constructed to allow for seasonal variations in activity. The model can be used to gain insight into the effects of possible shocks to the system as well as to predict the course of future market activities.

Composition of the Lettuce Market Model

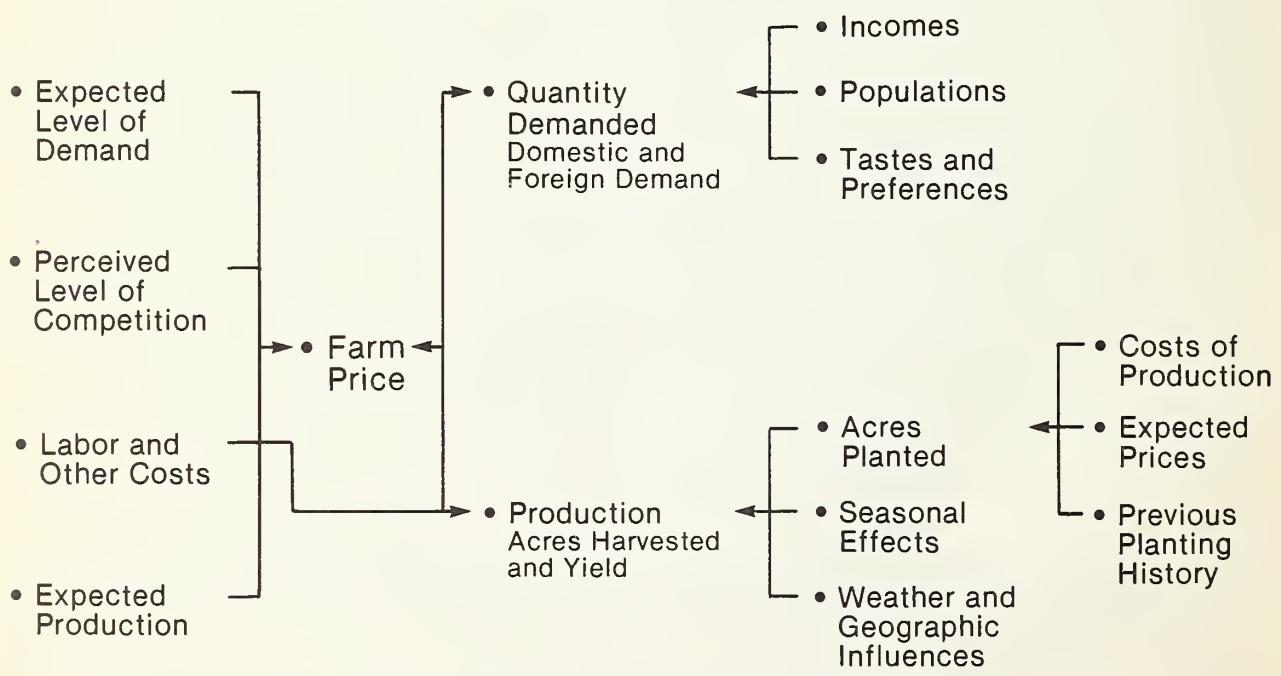
The basic components of the simulation model of the lettuce industry are shown in figure 1. Equations were used to determine farm price, domestic demand, export demand, yields, domestic supply, and harvested and planted acreage.[2]

In a perfectly competitive environment, producers cannot affect the level of price at the time of sale. Under imperfect competition producers exercise market power and can affect price levels. The lettuce market model includes a price equation capable of representing either situation. It is hypothesized that producer market power is stronger in the fall and winter seasons when competition is weakened. Furthermore, if producers are exercising market power, then they will react to expectations of demand and supply conditions for the relevant pricing period. If the net effect of the variables representing producer

[2]Details regarding the equations used and methods of estimation can be obtained from the authors. These results are to be published elsewhere.

Figure 1

Basic Lettuce Market Structure


• Incomes
• Populations
• Tastes and Preferences
• Expected Level of Demand
• Quantity Demanded Domestic and Foreign Demand
• Perceived Level of Competition
• Farm Price
• Costs of Production
• Acres Planted
• Expected Prices
• Labor and Other Costs
• Production Acres Harvested and Yield
• Seasonal Effects
• Previous Planting History
• Expected Production
• Weather and Geographic Influences

market power is zero, then the model is reflecting elements of perfect competition. If the net affect is not zero then elements of imperfect competition are being reflected.

Past trends in quantities demanded were used as measures of expected demand levels, and trends in historical yields coupled with current planted acreage were used as measures of potential supply. These expectation measures, together with variables shifting the price relationship to reflect varying intensity of interregional competition for different seasons of the year, were used as proxies for the competitive climate in which prices are formed. As expected, farm prices were found to be affected positively by expectations of increased demand and negatively by expectations of increased production. Prices also were affected negatively by increased interregional competition and the increased availability of substitute products that occur during the spring and summer quarters. Prices were positively affected by increases in costs of production, including increased wages for harvest labor. In particular, it was found that at the historical average (1954-77), a 10-percent increase in wages paid to harvest labor would result in a 5.2-percent increase in lettuce prices.

Domestic demand was found to be negatively related to price and positively related to disposable per capita income, although both effects were found to be small in magnitude. At the historical average, it was found that a 10-percent increase in price would reduce lettuce consumption by only 1.2 percent while a 10-percent increase in disposable per capita income would increase lettuce consumption by only 1.8 percent. Current consumption was found to be positively related to the previous three years' quantities demanded, which proxied for trends in tastes and preferences. Thus, habits formed in prior years tend to affect present consumption levels.

U.S. lettuce export demand is essentially total Canadian demand in winter, spring, and fall and Canadian demand in excess of their production in the summer. U.S. export demand was found to be negatively related to Canadian production and U.S. farm price adjusted by the exchange rate for Canadian dollars, and positively related to Canadian disposable income and population. On the average, a 10-percent increase in the price of lettuce converted to Canadian dollars resulted in only a 1.0-percent decrease in lettuce exports, while a 10-percent increase in Canadian disposable income resulted in a significant 6.8-percent increase in lettuce exports. The effect of Canadian production was essentially to replace U.S. produced lettuce in Canadian consumption.

Acreage harvested was found to depend positively on lettuce price and negatively on wages paid to harvest laborers; however, the effects were extremely small. Specifically, a 10-percent decrease in lettuce prices would reduce acreage harvested by less than 0.1 percent, while a similar increase in the wage rate would decrease harvested acreage by only 0.1 percent.

Acreage planted to lettuce was found to be positively affected by the price expected to prevail during harvest and by the acreage planted in the corresponding planting season the previous year. There was a negative relationship with costs of production and the uncertainty associated with the expected price. In addition, it was found that the winter quarter would characteristically exhibit a larger number of planted acres than the other three quarters. Evaluation of individual effects revealed that a 10-percent increase in expected lettuce price (measured as an average of past prices) would result in a 4.2-percent increase in acres planted, while a 10-percent increase in production costs (measured by the index of prices paid by farmers for production items) would result in a 2.0-percent decrease in plantings.

Verification of the Model

Seven major mathematical relationships were developed to describe the lettuce market. The complete market model was constructed by combining these equations so that they could be solved to obtain a unique set of solutions for acreage, quantity flows, and prices in each season.

Table 1—Average percent errors in the lettuce market model

Variable predicted	Average percent error			
	Winter	Spring	Summer	Fall
Acreage planted	10.36	9.05	6.45	5.17
Acreage harvested	11.31	8.97	6.38	4.36
Yield	6.40	6.38	8.00	3.85
Production	8.75	12.23	6.39	6.93
Domestic consumption	9.83	13.46	6.26	7.05
Price	15.79	21.96	11.44	14.02
Exports	15.19	7.52	43.45	14.43

Note: Model solutions were obtained using actual data for exogenous variables and model-generated values for lagged endogenous variables throughout the prediction sequence.

The reliability of the lettuce market model as a predictor of economic activity was tested by comparing actual and simulated results of market operations. The simulation model was used to generate predictions over the years 1960-77, and these results were compared to actual values realized over the same period. Accuracy of the model was then evaluated by calculating the average percent errors of model predictions (table 1).

The average percent errors suggest that the model can be considered a reasonably accurate representation of the lettuce market. The degree of

error is comfortably small in all cases except for summer exports; however, it is believed that this is not prejudicial to the analysis since only 2 percent of the summer crop is exported. Predictions of the critical elements of market activity are considerably more precise. Errors in predictions of quantities demanded and supplied vary between 6.26 and 13.26 percent, while errors in price predictions range from 11.44 to 21.96 percent. Given these measures of model precision, predictions of future market outcomes can be interpreted in their proper context.

Figures 2 and 3 provide graphic representations of actual and estimated results for lettuce prices and production. These graphs reveal that prices have fluctuated much more over the period of observation than have quantities produced. Model predictions accurately capture the general trends that have been observed over time, but radical fluctuations away from the trend are not reflected by simulation results. Thus, it is not surprising that percent errors are greater for prices than for quantities.

The data used to construct the lettuce market model covered the period 1954-77. Since data are now available for 1978, predictions can be compared to actual outcomes for that year as a further test of the reliability of the simulation model. Actual and predicted values for 1978 are presented in table 2. The pattern of results varies. Quantity predictions for winter, spring, and fall are all very near the actual figures. Summer predictions are less accurate, but these results too are within reasonable limits of error. On the whole, quantity predictions can be considered quite precise.

As expected, the accuracy of lettuce price predictions varies more widely. The spring price prediction is evidence of the difficulty that the model encounters in capturing significant sharp fluctuations in market activity. Spring lettuce prices were higher in 1978 than ever before. The model predicted an increase of approximately 60 percent over the 1977 spring price, but the actual increase was nearly 300 percent. Such marked departures from historically observed market trends reflect phenomena that temporarily disrupt the market, such as short-term restrictions in supply that cause abnormally high prices for a limited time. Such disruptions are not entirely captured by the model.[3]

At the other extreme, summer and fall price predictions were exceptionally close to the actual values. Figure 3 shows that summer and fall prices in 1978 were near the trend level. Market operations during those periods were not disturbed by uncharacteristic events, and so the model provided a highly accurate forecast. In general it can be expected that, given the assumption that market conditions do not radically depart from historical patterns, the simulation model will provide accurate predictions of future market outcomes.

Simulated Effects of Increased Wage Rates

In addition to its use in generating predictions of future lettuce prices and quantities, the model

[3]A recent example of this type of situation occurred in the winter quarter of 1979. Unfavorable weather and the psychological effects of the labor strike combined to push the season average price over $15 a cwt.

Table 2--Actual vs. predicted lettuce market outcomes for 1978

Season	Acres planted	Acres harvested	Quantity supplied	Quantity demanded	Exports	Yield	Price
	1,000 acres			*1,000 cwt.*	*Cwt/acre*		*$/cwt.*
Winter							
Acutal[1]	63.3	62.2	14.3	13.3	1.05	231	10.30
Predicted	72.2	70.1	14.2	13.1	1.10	202	8.18
(%difference)	(14.1)	(12.7)	(0.7)	(1.5)	(4.8)	(17.8)	(25.9)
Spring							
Actual[1]	54.9	54.4	15.7	14.4	1.33	289	16.50
Predicted	52.5	51.6	14.9	13.7	1.15	289	8.86
(% difference)	(4.6)	(5.4)	(5.4)	(5.1)	(15.7)	(0.0)	(86.2)
Summer							
Acutal[1]	59.8	58.0	16.4	16.0	.41	283	7.27
Predicted	55.0	52.0	14.4	14.0	.32	276	7.17
(% difference)	(8.7)	(11.5)	(13.9)	(14.3)	(28.1)	(2.5)	(1.4)
Fall							
Actual[1]	62.9	61.3	13.9	13.0	.88	227	8.58
Predicted	63.5	61.7	13.8	12.7	1.13	224	8.77
(% difference)	(1.0)	(0.7)	(0.7)	(2.4)	(28.4)	(1.3)	(2.2)

Source: USDA, "Vegetables: 1978 Annual Summary - Acreage, Yield, Production, and Value" Crop Reporting Board, ESCS, Washington, D.C. 12/78

can be used to test the effects of certain changes in market conditions. For example, inflation in the national economy is represented in the lettuce market model. By varying rates of inflation over time, while holding other market conditions at normal levels, the unique effect of inflation can be evaluated. Similar experiments can be performed on other elements of the model. The importance of the export market can be evaluated by altering factors affecting Canadian imports. Sensitivity of the market to changes in costs of production, wages, and labor productivity can be evaluated as well.

Recent union activity on behalf of lettuce harvest laborers in California indicates that the possibility exists for harvest labor costs to significantly increase in coming years. The effects on producers and consumers of increased wages can be examined by using the simulation model. The United Farm Workers Union (UFW) has announced a goal of obtaining wage increases of approximately 40 percent above current levels (*3, 4*). Many lettuce producers are resisting UFW pressure to obtain such increases.

Two sets of assumptions were used to evaluate the impact of wage increases on the lettuce market. Both sets were extrapolated over the period 1979-83 to allow effects of interrelated components of the market structure to be resolved over time. Baseline projections were made assuming normal trend adjustments in wages (7 percent per year) and other factors as an average of changes observed over the past five years. A second set of projections was developed for the market under the assumption of similar normal trend adjustments for all factors except wages. Wages were increased in the first year by 40 percent, but subsequent annual wage increases were held to 7 percent. Therefore, the comparison is of an effective wage difference of 33 percent in 1979 and moderately increasing differences in following years. Simulation results for production, domestic consumption, and prices are given in table 3.

The values given in table 3 for production and prices are displayed graphically in figures 2 and 3 for the period 1979-83. The result of the 33-percent immediate wage increase over the baseline projections indicates that over time production and consumption would be expected to decline slightly and prices to increase. The magnitude of change, however, is relatively small as differences in levels of output under the two scenarios are less than 2 percent for all seasons over the five-year period. Price differences average slightly over 7 percent for the same period.

The implied increase in prices from 1978 to 1979 ranges from about five to fifteen percent for the

Table 3—Lettuce market simulation results under baseline assumptions and with higher wage rates

Year/season	Baseline projections			Projections with higher wage rates		
	Production	Domestic consumption	Price	Production	Domestic consumption	Price
	1,000 cwt.		*$/cwt.*	*1,000 cwt.*		*$/cwt.*
1979						
Winter	14.64	13.50	8.44	14.53	13.40	9.11
Spring	15.25	14.07	8.85	15.15	13.97	9.52
Summer	14.61	14.32	8.34	14.52	14.23	8.98
Fall	14.24	13.08	9.25	14.14	12.98	9.93
1980						
Winter	15.03	13.86	8.81	14.90	13.74	9.36
Spring	15.62	14.41	8.85	15.49	14.28	9.41
Summer	14.88	14.60	9.09	14.74	14.47	9.76
Fall	14.68	13.50	9.78	14.53	13.35	10.55
1981						
Winter	15.41	14.21	9.30	15.24	14.04	9.90
Spring	15.95	14.71	9.20	15.79	14.55	9.79
Summer	15.15	14.90	9.17	14.98	14.73	9.82
Fall	15.04	13.83	10.43	14.84	13.64	11.25
1982						
Winter	15.72	14.49	9.84	15.51	14.29	10.57
Spring'	16.22	14.96	9.75	16.02	14.76	10.42
Summer	15.41	15.18	9.20	15.21	14.99	9.85
Fall	15.36	14.43	10.93	15.12	13.89	11.75
1983						
Winter	16.00	14.74	10.38	15.74	14.49	11.27
Spring	16.45	15.17	10.39	16.22	14.94	11.14
Summer	15.64	15.44	9.46	15.41	15.21	10.19
Fall	15.66	14.41	11.27	15.39	14.14	12.13

Figure 2

Lettuce Production and Prices

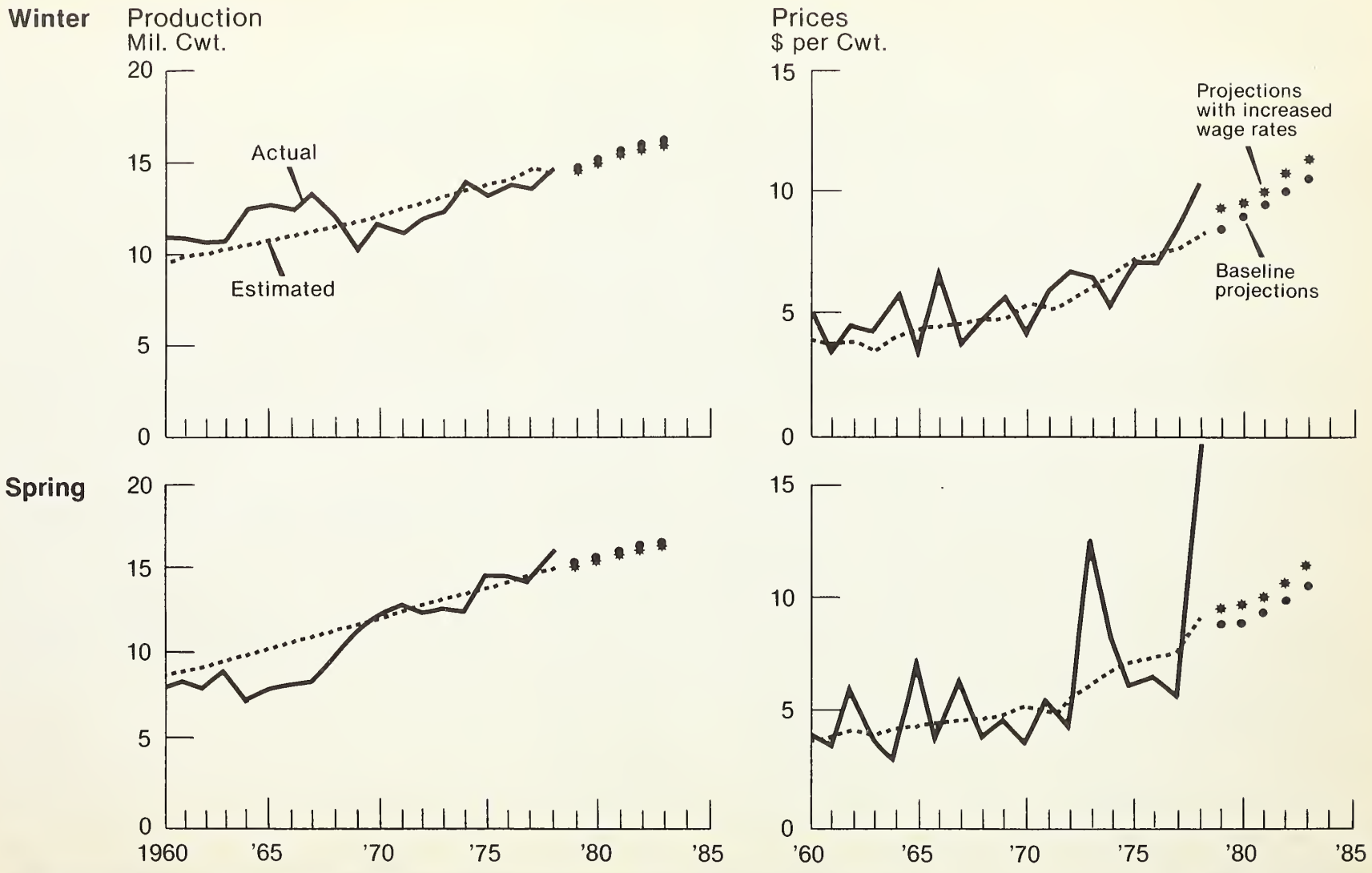


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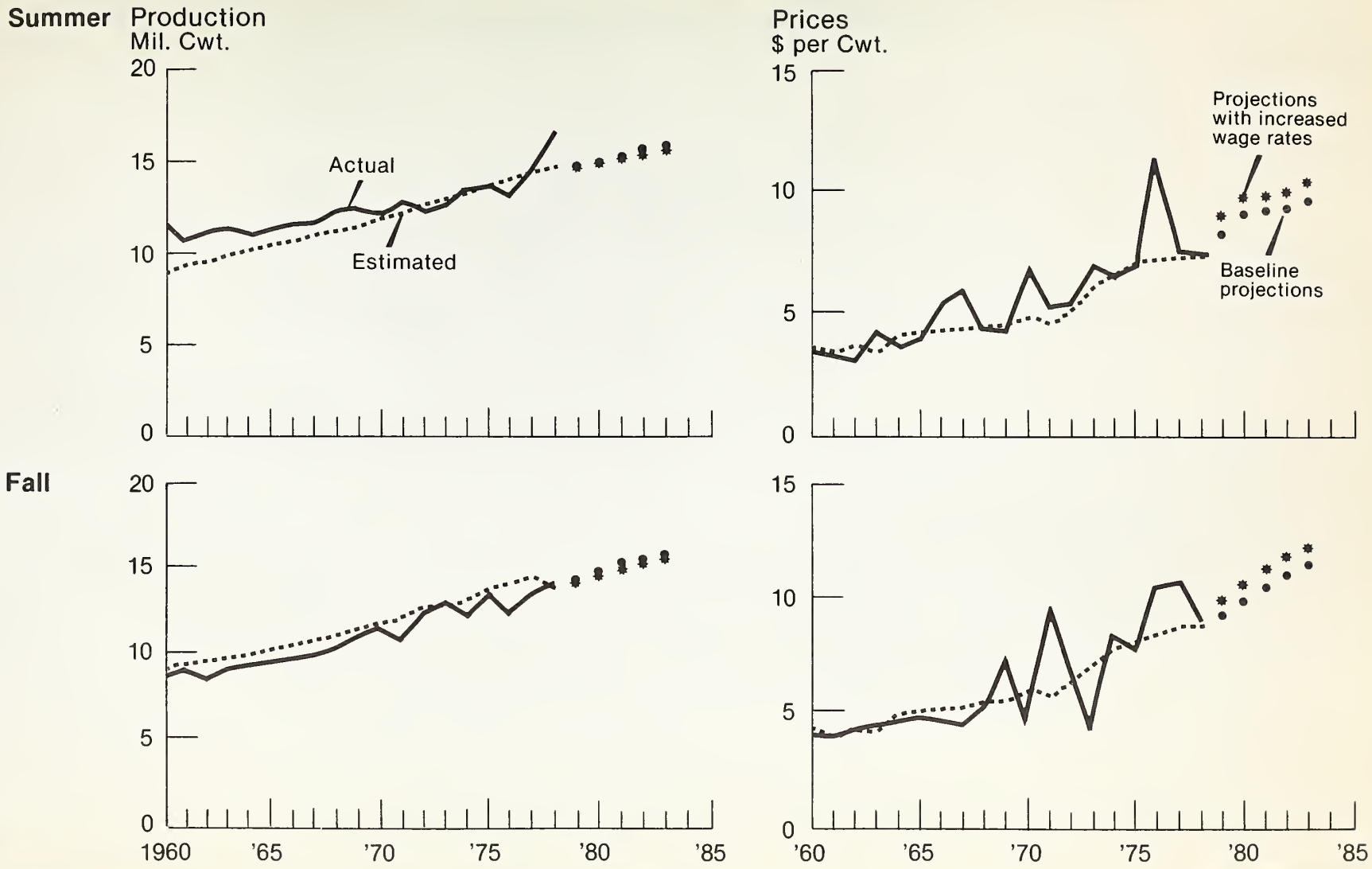
Figure 3

Lettuce Production and Prices



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fall and summer seasons under the baseline analysis. The effect of a sudden 40-percent increase in wages, together with normally trending adjustments in other factors, would be to increase lettuce prices by about 10 to 25 percent for the same period. Production adjustments over 1978 figures would be less pronounced. Under the baseline, production could be expected to rise by only as much as three percent in 1979. Given higher wage costs, production would still likely rise, but the increase would be somewhat smaller.

Some implications of these results can be interpreted by examining the cost structure of lettuce production. Using the work of Johnson and Zahara (*1*), it can be shown that, for 1975, a 33-percent increase in wages would translate to a 6.5- to 14.0-percent increase in lettuce harvesting costs. As harvesting costs constitute about two-thirds of total variable costs, the costs of producing lettuce would increase by 4.3 to 9.3 percent. This compares with a price increase of about 7 percent based on the results of this study. The simulation results indicate that, for 1979, total grower revenues would be between 6.5 to 7.2 percent higher under the assumption of wage payments consistent with UFW goals. Thus, it becomes evident, on the basis of these results, that the major portion of labor cost increases would be passed forward by lettuce producers to marketing firms and consumers.

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LIST OF TABLES

Table	Title	Page
1	Vegetables and melons for fresh market: Reported commercial acreage and production of principal crops, selected season, 1977, 1978, and indicated 1979	5
2	Vegetables for processing: Planted acreage, annual 1978 and 1979	8
3	Potatoes, Irish: Acreage, yield per acre, and production, annual 1977, 1978, and indicated 1979	11
4	Sweetpotatoes: Harvested acreage by States, United States	12
5	Beans, dry edible: Acreage, yield per acre, and production, annual 1977, 1978, and indicated 1979	13
6	Peas, dry field: Acreage, planted and harvested, annual 1977, 1978, and acreage for harvested 1979	14
7	Commercially produced vegetables: Civilian per capita consumption averages 1947-49, 1957-59, and 1965 to date	15
8	Potatoes, sweetpotatoes, dry edible beans, and dry field peas: Per capita consumption, primary distribution weight, averages 1947-49, 1957-59, and annual 1965 to date	15
9	Civilian per capita consumption of selected commercially produced fresh and processed vegetables, United States, calendar years 1966-77	18
10	Fresh vegetables and melons, commercial: Per capita consumption, farm weight, averages 1947-49, 1957-59, and 1965 to date	19
11	Canned vegetables: Per capita consumption processed weight, averages 1947-49, 1957-59, and annual 1965 to date	20
12	Vegetables, frozen: Per capita consumption, processed weight, averages 1947-49, 1957-59, and annual 1965 to date	21
13	Vegetables, fresh: Representative prices for stock of generally good quality and condition (U.S. No. 1 when available), New York, Chicago, and shipping point, indicated periods, 1978 and 1979	22
14	Fresh vegetables: Retail price, marketing margin, and grower and packer return per unit, sold in New York City, indicated months, 1978 and 1979	23
15	Fresh vegetables: Representative truck rates for selected fresh vegetables, Jan.-June 1978-79	24
16	Fresh vegetables: Representative rail rates for selected vegetables, Jan.-June 1978-79	25
17	Canned vegetables: Commercial pack and canners' seasonal supply shipments to latest month, and total seasonal shipments, selected commodities	26
18	Vegetables, frozen: United States commercial packs 1977 and 1978 and cold storage holdings, July 1, with comparisons	27
19	Potatoes: Prices f.o.b. shipping points and wholesale price at New York and Chicago, U.S. No. 1 indicated periods, 1978 and 1979	28
20	Sweetpotatoes: Representative wholesale price (wholesale lots) at New York and Chicago for stock of generally good merchantible quality and condition (U.S. No. 1 when available) indicated periods, 1978 and 1979	28

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